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IF last week's Microsystems conference and exhibition demonstrated one thing it is that the old Inbels — mainframe, mini, micro — are of declining validity.

Today's microcomputer has more computing capability than the Eniac. It is 20 times faster, thousands of times more reliable, occupies 1/20,000 the space and costs 1/10,000 as much.

The capabilities of microcomputers such as the Digital Equipment PDP-11 have been extended to offer performance, capacity, peripherals and software support equal to the smaller mainframes.

We are seeing the markets of the semiconductor makers and the microcomputer manufacturers overlap at the low end of the microcomputer market. Indeed, Data General's 16-bit Microvax is the Nova computer CPU on a chip and is a direct miniaturisation of the existing minicomputer.

It is only a short step from the single board computer with its family of compatible cards, to the creation of a fully packaged, minicomputer replacement, particularly as it is now true to say

Software support the deciding factor

that high level languages are available on many microcomputers, including all the common languages available on mainframes.

Given the pace of technological change, how and where are microcomputers and mainframes going to be used?

We will see a stratification of the markets because of the type of support given. At the bottom end, at the personal or hobbyist level there will be limited support for the system and the enthusiast will to a large extent fend for himself. However, in commercialising such systems it must be borne in mind that small businesses require systems that

work. Support must be simple and software reliable.

The microcomputer market will stratify according to application and in many cases, units will consist of multi-microprocessor systems. At the one-off level, the mini or micro system will be put into the product, whether it is a sophisticated industrial control system or used, for example, in a car, and full external support will be provided.

At the top end of the microcomputer market, the typical user will buy a totally bundled system from a single source with maintenance at the computer board level. These micro systems will be software compatible with the rest of the com-

puter hierarchy.

There is overlap now between the smaller mainframe and larger mini, and here again the choice of machine will largely be made on the software and support offered. On a large commercial system the environment will be much as today, with comprehensive in-house support although there will be some shift towards turnkey service support.

There are many uncertainties in choosing from the fast-changing plethora of hardware offering more for less. What is clear is that the next few years will present a tremendous challenge to all those providing software. This challenge will partly lie in the provision of much novel and complex applications and systems software.

More important, however, will be the achievement of user satisfaction through software maintenance and back-up services.

**CW's new
editor**

IN his first Computer Weekly, Gareth Jones, who has been editor of CW since 1976, looks at the micro technology on the computer industry and software.

Jones, 30, comes to CW from the Science and Technology Press where he has been publisher for several years, including Microprocessors, Microsystems, Communications, and Inter-Privacy.

He first joined IPC by work on the editorial Computer-Aided Design.

FOCUS

Plugging the privacy gap

THE recently released Data Protection Committee Report appears to contain more holes than a 96 column punch card. Unfortunately it could well be the DPM who will be expected to plug this particular gap.

It is this general woolliness, perhaps, which most attracts those organisations most closely involved in computer privacy. Ted Cluff, of the IDPM, finds the report "surprisingly very acceptable". There is strong evidence, he suggests, that for once the representations of leading individuals and bodies in the DP industry have been heeded.

Backing this endorsement with equal enthusiasm, Alan Benjamin, of the CSA, compliments the compilers. Typically cautious, the Manchester-based NCC, while welcoming the report, wants more time to examine the recommendations in detail. This request seems strange, given the acknowledged involvement of the NCC security team in the overall

structure of the report. Such universal acclamation in the computer world is unusual. Normal interface standards more often come non-compatible shaped.

However, seemingly alone amid the chorus of praise, the Editor of Computer Weekly (Computerweek, December 7) believes that the report is late, vague and does little more than pass the buck to a yet to be formed Data Protection Authority.

Bucking the plaudits is now a cause available to those most involved in data protection — the DP professional. The IDPM, in association with Computer Weekly, are mounting a far-reaching survey into the implications of the proposals on the DP industry.

Questions will cover such areas as involvement and costs to the DP installation, user relationships and new application design.

Focus could, of course, save all parties considerable time and trouble. Privacy awareness in the DP team is notably minimal. What little exists is indelibly confused with computer security. The report proposes no fewer than 37 different codes of practice, each highly flexible.

As far as the DPM is concerned, his overriding code of practice is to deliver the goods as and when required.

Apart from the senior system analyst, few in the installation would comprehend, let alone try to interpret, any end product.

Fortunately for the DP section, the onus of privacy responsibility in respect of registration or licence for each application involving personal data rests firmly with the user.

The report insists that ultimately it is the miscreant end user who could face a term of imprisonment. In such cases, privacy would be complete.

But it does seem that the report compilers have been overtaken in the course of their deliberations, by the fast-expanding user power movement.

User and DP personnel are often the same person. Distributed processing is spreading almost faster than the current profuse amounts of government funds being made available to

micro technology. Inevitably the civil liberty bodies are not in full accord with the report. The NCC believes that computer-based files present a serious personal threat — especially those operated by State police forces.

Where national security is involved, any protection of data should be directed to safeguarding the individual. Making such files acceptable to all and sundry would surely abuse the right to protection.

Last month's joint IDPM, NCC and NCTC privacy conference was timely (Computerweek, January 25). Though whether the relative conference application form contravenes personal privacy by requiring full names, addresses and phone numbers is a case for a code of practice.

Ten years ago...

COMPUTER WEEKLY
FEBRUARY 6, 1969

NATIONAL Westminster Bank is to install a £3 million IBM system for clearing cheques, due to go live on January 1, 1970. Eighteen IBM 1419 magnetic ink code readers will handle the documents and the system is claimed to be the most advanced of its kind in the banking world. There is likely to be mixed reaction to IBM's statement that PL/I will be released shortly in a 16K version for 380/20 users. . . . Coal Board chairman Lord Roberts told the BCS that one of its most important tasks would be the education of laymen. . . . ICL took the lead in the last quarter of 1968 with 1,233 UK installations to IBM's 868, according to figures released by the Ministry of Technology. . . . An agreement has been signed between the Computer Science and the IPC subsidiary International Data Highways to initiate a computerised asset booking system in London for theatre and other entertainment.

1984 and all that . . .

OUR first example this week of the funny things people believe about computers was sent in by Ken Taylor, of Ewins 85.

He [a well-known psychologist and computer scientist] believes brain is programmed just like a computer. And it needs to be — just like a computer — but it can change and update itself.

Work for seven-eighths of the people in this room will become because computers and mechanisms are taking over.
Melvyn Bragg, in Any Questions?

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Burroughs adds modular terminals

GENERAL-PURPOSE terminals are beginning to follow the trend set by the European banking terminals of providing users with a wide selection of modules from which to choose the most appropriate configuration for each location. The new Philips PTS 8000 and Datacube Altekop System 41 pioneered this concept (CWL October 12, 1978), and Burroughs has just announced a complete product line in the US. The new line, called BMT for Burroughs Modular Terminals, comprises a microprocessor control unit with substantial local memory, plus displays, keyboards, printers, magnetic card readers and memory subsystems.

GEC-Fairchild goes into production at the Wirral early next year

GEC-FAIRCHILD is to build a brand new semiconductor manufacturing factory in the Wirral, as predicted in C.W. December 14, 1978, to make MOS and LSI devices. The factory, at Neston, Cheshire, could eventually employ about 1,000 people, and production is scheduled to start early next year, with full production by mid-1981.

The full board for the joint company has also been announced. Chairman is Robert Clayton, GEC technical director, and the other directors are, from Fairchild, Richard Franklin, Murray McLellan and Andrew Processit, and from GEC, Martin Jay, Dr David Leskey and Howard Lusty. Walter Derrington, of Fairchild, has been appointed secretary.

Fairchild vice-president, David Marriott had previously been announced as managing director in W. January 11. The joint venture partners are each putting some £10 million into the Neston site, and a further £5 to £7 million will come from government sources. This will be split between regional development grants for factory building, and the interconnectronics industry support programme.

As already announced (C.W. August 17, 1978), the new company will start by manufacturing 16K MOS RAMs, complemented by 64K LSI solid memories. Both of these are Fairchild designs. The first GEC designed parts are likely to come from its range of MOS telecommunication devices.

About 75% of the workforce will be semi-skilled production workers, predominantly women. This is unlikely to have much impact on the Wirral's unemployment level.

The remaining 25% will be engineers, designers and management. The plant will be built on a 100-acre site, and will be unique for a major computer supplier.

In the UK, DEC will move some of its refurbished equipment for the first time at Matrix 79, the second user and leasing show being held at Fiddlers' Hotel, East Grinstead, Sussex, on March 6-7.

The kit on show will include a complete system called Honey-moon which will be configured around a refurbished PDP-11/55 but which will also incorporate some new kit, including the 28 Megabyte RK07 disc drive.

DEC says that its prices will be comparable with the second-hand computer market and that purchasers of its refurbished kit will be given the same hardware and software support as new equipment customers.

Biggest order, claims Honeywell

HONEYWELL has won the biggest commercial order for computers in its history from General Electric of the US. The order is for 21 Honeywell Series 80 Level 66/DPS systems.

The machines that they will replace at GE sites in the US include Series 800 computers.

Saving blushes

INTERVIEWING of psychiatric patients by computer in Bradford Royal Infirmary's psychiatric clinic is being studied to see if embarrassment of patients over their sexual problems can be alleviated this way. Consultants' time is also being saved.

As well as being used for dispensing cash, the 1780 can be programmed to handle deposits, customer account inquiries, requests for cheque books and statements, inquiries about foreign exchange rates and bill payments by account transfer.

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Mirror cuttings system allows unlimited cross-referencing

AUTOMATION is coming to the newsprint world. The Mirror Group Newspapers in the form of a combined microfiche and computer system produced by Image Systems of Folgate, Continuous updating of 400 cuttings from nine national newspapers every day will eventually build up to a file of four million items online.

The Mirror Group's present library contains 20 million cuttings occupying 8,000 square feet of floor space, and is growing continually. The microfiche system will not only save space but make retrieval much easier, by allowing unlimited cross-referencing and searching.

Ten terminals initially are being installed in the Mirror's offices in Holborn, each holding a complete set of up to 780 copy files in a power-driven magazine.

Cuttings vary greatly in size but there will be an average of three and a half per frame, and with 410 frames per file that means each terminal can hold over a million cuttings. The terminal also incorporates a Burroughs VDU and keyboard.

linked to a central mini on which the indexing terms are held. This is a Univac V77/400 with a 110 Mbyte CISC disc. Two types of keywords are held, "general" and "biographical," in an inverted file, and the user can search using several terms combined with Boolean "ands" and "ors," such as "strikes" and "grave-diggers".

The computer indicates how many references have been found, and after each search and drives the microfiche terminal to display the required frames. The retrieval software is Image Systems' own. Updating of the keywords file by library staff will go on all the time. For

each cutting an indexer will type in whatever keywords he thinks appropriate, without having to make a copy of the cutting for each extra keyword.

Olivetti launch

OLIVETTI has announced a less expensive successor to its AS/AS range of desk top accounting computers. Called the BCS 2030, it is similar in design to the AS/AS machines but has improved features that include a 100 cps matrix printer, a 32-character plasma display for operator interaction and a self-diagnostic facility. The BCS 2030 costs between £5,500 and £8,500.

Flexing mathematical minds

MATHEMATICAL wizards at school will have a chance to flex their minds when the 21st International Mathematical Olympiad is held in London in July. Education Secretary Shirley Williams has promised £15,000 towards the cost, and the remainder will be met by public subscription. Teams from some 28 countries are expected to take part, each consisting of two teachers as leaders and eight or nine secondary school pupils. The Schools Mathematics Project and the Mathematical Association are joint organisers of this year's Olympiad, the first to be held in the UK. There is still time for schools to put forward candidates for the UK team.

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with most mainframes, and like all Wang computers it allows easy expansion. Find out about the 2200 series and its potential for your applications. There could be much more happening out there than you ever imagined.

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Downtime by Chad

Beyond a joke

WANTED, desperately: some new computer jokes for public figures to tell in their speeches. Those who go to conferences will know well the sickening feeling that comes over you when you realise the keynote speaker is starting yet again on the anediluvian one about "Is there a God?" "There is now."

David Steel was the latest perpetrator of this one, at the Privacy Conference the other week. The Libers' policies are original enough; you'd think they could dig up some original humour.

Then there are the endless jokes about machine translation, usually zoological: water sheep from hydraulic mms and so on.

I'm sure the ingenuity of our profession can come up with something new in this line, if we make it really solid effort. Jasper Carrott did pretty well, when he said "I left school with two O-levels, in maths and art, so I spent three years painting computers."



Troubled waters?

DOWN among the budding Picasso and Dylan Thomases who have left their mark on the walls of gentlemen's convenience the world over, technology is rearing its ugly head.

On the wall of the emporium of bodily functions on Platform 4, Watford Junction railway station is written the question: "What about microprocessors then?"

CW's extremely small correspondent Martin Banks, on hearing this, stuck to his opinion that "these things have to come out somewhere."

'The real world of computing'

IN Focus (CW, January 18) the writer, a harassed DP manager to judge by the rest of the piece, complains that the "real world of computing" was noticeably absent from BCS 78, which concentrated on "washing machines, electronic casinos and micro-robots". But the real world of computing is going to become more and more the world of micros in novel applications, and user-oriented computing devices on the user's desk or workbench.

At the same time the large mainframe in its

air-conditioned shrine, and all the trappings that go with it, will become increasingly irrelevant. It is no use the DPMs protesting ever more stridently that this is the real world of computing; in computing (as in life) the world changes and we need to change with it. Or shall we live to see the IDPM following the print unions into a last-ditch stand against the new technology?

DAVID BARRON
Professor of Computer Studies
University of Southampton.

Monthly award for jargon?

I HAVE once been given space in your letters column to plead for "computer people" not to use silly jargon and unjustified neologisms. There was a time when they might have impressed the hearer. But now the hand has been overplayed to such an extent that it has become a best joke, at worst an irritation for which one speaker at a conference I recently attended was taken to task by his audience.

The rules of the game seem to be that if an adequate but commonplace word or phrase exists, invent a new one so that a facility becomes a monofacility, a utility, a tovality becomes a comfort station (like a sofa?), a silence becomes a quietise (Oklahoma Corporation) etc.

Some exponents of this black art get carried beyond the bounds of commonsense and produce monially handwritten documents (EMI-Threshold) presumably to distinguish them

from pedally handwritten ones.

The contradiction has to be overlooked as in cosmetic damage. Now can be expanded to at this moment in time, or even, within the present time frame. But it takes an expert to

Professionalism of the Press

I WAS pleased to read the article by Nicholas Entleknapp (CW, January 11), outlining the Press man's view of the PR practitioner. At last somebody in the industry has tried to point out the facts concerning the way in which PR people should deal with the Press.

For too long, companies in the computer business have lacked an understanding of the real role of PR and put tremendous pressure on the PR man when, for instance, company management demands that he organises an editorial apology over an

innocent typographical error; or complains to journalists over a management quote in the Press, despite the fact that what is reported is actually what was said.

Further embarrassing situations occur for the PR man when company management demands to see what the journalist intends to publish when, in fact, it is the journalist's prerogative to evaluate and report the situation as he sees it.

There are a number of PR people who will bow in such client or company situations,

only doing damage both to themselves and to the company concerned. However, there are also quite a number of good PR people operating in the computer industry.

We also know the majority of the Press and respect the professionalism that lies within the computer publications. Professionalism is what it is all about and I am glad that somebody has, at last, pointed this out.

EDDIE COULTER
Market-Link PR Ltd,
London.

'This dictionary does not claim to be complete'

I HAVE read with concern Rory Johnston's review of my publication, Ocran's Acronyms (CW, January 4).

I would, however, like to address myself to Mr Johnston. As stated in the introduction to my book, this dictionary does not claim to be complete. It being the first edition, there are bound to be gaps which subsequent editions would try to bridge. I have yet to see a dictionary which is complete in its entirety. You set off in your review by citing some abbreviations you know of which you couldn't find listed in my book, and you held these throughout your review against my book. I think you deliberately set out to write a damaging review in spite of the many good qualities inherent in my book.

You cited QRS and QSS which are defined as Quasi Stella Radio Source and Quasi Stella Source, as errors. How wrong could you be! You may have found Stella used in some dictionaries of abbreviation but the source I had, used Stella to convey what, was really meant. If you would care to consult A Dictionary of Difficult Words,

by Robert H. Hill, published by Hutchinson, you will find the meaning of Stella. Stellar as you also quoted is also spelt Stellar in some dictionaries. Enclosed is the photograph of a page from Space-Age Acronyms, by Moscor. I shouldn't take Jonathan Smith's girlfriend's name in vain.

Surely you were not suggesting in your review that I should sit in front of the television set and watch programmes in order to obtain entries for my book. If you are, then I find this suggestion childish. It is impossible to cover everything, and you should know that.

A subject heading referred to several times in my book is data processing and not data science as you stated in your review. If you haven't heard of data processing in your own professional field, then I very much wonder how you came to write a review on something you don't understand.

CM stands for Command Module and it doesn't take much time to deduce that module is a typing error which hadn't been picked up during proof-reading. This is put right in part two

where under Lunar Sciences the correct definition is cited. I ask, is this the sort of thing you have never come across in books? You gave the impression that there are many of these and in actual fact there are not.

You completely failed to understand the classification used. Why shouldn't AC be located under Mathematics if it is used in a mathematics publication? Why shouldn't IPSPS, Inhibitory Post Synaptic Potentials, be located under Management? One of the factors which influence placings under subject fields is the context in which the abbreviation is used. Cybernetics is one of the subjects quoted under IPSPS in part one and in the article in which IPSPS is used, it is used in the context of an attempt to solve management problems — a machine and man and man relationship. As a reviewer, you should try and appreciate the premise from which these classifications are made.

Reading around the abbreviations helped a lot to determine placings. Many of the abbreviations are found used in unsuited subject fields and it is wrong to assume that a placing is wrong because the abbreviation is known to be used in a traditional subject field. To think that it is wrong to put IPSPS under Management is to think that management is still the old-fashioned Administration.

Think of your own subject area and find out how many of the terms, abbreviations and acronyms used are also used in management studies.

You wrote about my approach as unsound. It is as sound as it could be and I don't think you are qualified to better it, judging from your review. You sounded as if you have a dislike for librarians. My profession enables me to have access to sources of information and the necessary formulation and the necessary construction by my section on notation terms. While preparing my dictionary I made constant use of thesauruses of Engineering and Scientific Terms, by the Engineering Joint Council. It is the best in the field. Also, I made detailed use of the Category Listing of Subject Headings with Scope Notes, issued by the American Institute of Aeronautics and Astronautics. This listing has been adopted by a number of abstracting services, which include STAR, Scientific and Technical Aerospace Reports; US Government Reports Announcement Index, and R&D Abstracts issued by the Department of Industry.

I need not comment on the style and skill which went into the preparation of Ocran's Acronyms since you abjectly refuse to recognise these qualities. It will be a waste of time. However, I am pleased to read that you found BWP for Brown Wrapping Paper amusing. It did amuse me, too. I found it in

Journal of Dairy Science was held enough notes in from the dictionary, book reviews for it Library Bulletin.

A wise maxim in writing is that when you are not sure of your ground, a descriptive review, if written is not descriptive structure.

E.B.O.
c/o Routledge and Kegan Paul
Store Street,
London WC1.

I am sorry Mr Ocran failed to liberations. To assume that the case I can only say that I am working with and for the benefit of several of the most important people in the world. The point I made is that a reviewer's comments are not to be taken too seriously. Some of these are obviously written by people who are not qualified to review my book. For instance, Andy Wright, Editor of Link and Bill, says: "I have found Ocran's Acronyms a very useful book. It is a pity that it is not more widely known." I have found it very useful. I have found it very useful. I have found it very useful.

Certainly many of the original not from the book from Ocran's sources. "Acronyms" and "abbreviations" are simply misspellings. There is no excuse for people who are not qualified to review my book. I have found it very useful. I have found it very useful. I have found it very useful.

"Data Science" is a very recent term. It is a pity that it is not more widely known. I have found it very useful. I have found it very useful. I have found it very useful.

Analogue exports mystery

From front page compared with less than £13 million in 1977. Customs officials were unable to explain the enormous increase even though the bill of lading is supposed to be checked for any suspect items at the point of exit and also at the Customs computer centre at Southend-on-Sea where the de-

Courses for DP managers

IN Focus (CW, January 18) refers to the National Centre's series of seminars for DP managers which are aimed at managers and senior staff.

At NCC we have been concerned that the DP manager should understand the business of microelectronics, commercial systems, and the role of the DP manager. We have developed the "Talking Point" evening training series to managers, and in March we are running the first of our computer approach seminars. These seminars are aimed at managers and senior staff.

ANTHONY
Training Development
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'UK can make worldwide impact in advanced electronic office systems'

IT is vital for the UK to get into the field of developing advanced electronic office systems, and there is no reason why we cannot make a worldwide impact in this area, according to James Merriman, new chairman of the Office Equipment Sector Working Party of Noddy.



Merriman... "the things we make must fit into the human environment."

Merriman, who was formerly with the Post Office as a board member for technology and is a past president of the Institution of Electrical Engineers, takes over the working party chair as part of the regular changeover scheme from V. H. Bylles.

He told Computer Weekly that, in addition to promoting the manufacture of office systems, the working party should also consider their effects on society in terms of social change and employment.

The party should help to alert people about these problems and

Voice response

A VOICE response system called Voleat is now being used by the Civil Aviation Authority to convert automatically weather reports on telex into speech for broadcasting to airline pilots.

stimulate thought on the subject. It was also important to promote office automation for the sake of increased efficiency and effectiveness of the country, he said.

"The things we make must fit into the human environment," Merriman said. He saw one of his principal tasks as establishing close working relationships with related working parties, namely those in computers, components and telecommunications.

POLITICS and Computing will be one of the principal topics at the European Computing Review 1979, to be held in London from March 28 to 30. Peter Walker, former Conservative

Industry Minister, will address the conference, along with Reginald Altkinson, of the Department of Industry; Gerald Watson, head of the Central Computer Agency; and several other well-



Peter Walker to address European Computing Review

known figures from politics, the pressure groups, and computing. Intended to explore the political terrain across which DP planners and

managers will be travelling over the next few years. Infotech feels there will be increasing political pressure on and interference with the computing community.

'Half-price' terminal for supermarkets

A HAND-HELD data entry terminal that costs £220 has been added by UCSL Microsystems to its range of terminals for supermarket stock control. Called the M25, it is said by UCSL to be half the price of any competitive product.

The M25 comes with a numeric data entry keyboard and with controls for retrieving data already stored and for transmitting data to a remote computer via an acoustic coupler. Memory capacities of 4000 and 8000 characters are available.

Hand-held terminals already sold by UCSL Microsystems include two programmable units — the M45 which is built by UCSL itself in the UK and the M50 manufactured in the US by the Norand Corp of Cedar Rapids, Iowa.

Dieter Moore, UK sales manager for UCSL Microsystems, tries out the M25 for himself.

Logica restructured with £5.67m investment by NEB

A COMPLEX pattern of ownership has resulted from the financial restructuring of the Logica group, which is now backed with a total investment of £5.67 million by the NEB.

NEWS IN BRIEF

2960 for health authority

BECAUSE its present ICL System 4/50 is not powerful enough to cope with increasing demands, the West Midlands Regional Health Authority has decided to replace it with an ICL 2960 valued at about £800,000. In addition to its general support for the authority's activities, the 2960 will play an important role in a DHSS project on the application of computers in hospitals.

MoD approval

THE GEC 4070 and 4082 have joined the 4080 in the Ministry of Defence standard list of approved machines. The approval, which follows an assessment made by IECCA, also includes the GEC Corni 66 compiler in its extended form.

Replace

SPRAY painting equipment manufacturers, DeVilbiss, is to extend the use of its online terminal facilities by replacing its NCR Century 75 with an NCR N8550 system. Valued at £210,000 the main applications of the new machine will include general accounting, inventory management, and shop floor control. Main storage is 250K, and there are two dual NCR 8550 disc drives and an 80K magnetic tape drive.

High speed VAX

ONE of the first users in the UK of the 32-bit Digital Equipment VAX-11/780 minicomputer will be British Gas, which has ordered a one Megabyte VAX for analysing data collected from pipeline inspections. The VAX will be installed at a new research centre being built by British Gas at Cramlington, near Newcastle.

The new IBM 4300. When? And how much?

Last Wednesday IBM unveiled the secrets of Series E. This Thursday are you still trying to calculate the real costs of the new system? When you could reasonably take delivery? Its system implications?

Relax. Take your time. And solve your immediate capacity or throughput problems with the help of the IBM experts. IBL can provide used IBM 370s and peripherals on short-term leases with all their proven advantages of reliability and cost-effectiveness. We can take care of the financing side. And help you upgrade when your company is in a position to take full advantage of the distributive processing capabilities of system 4300.

But if all you want now is the known facts on the 4300 — or advice as to its eventual suitability for your needs and how to finance it — we'll be just as pleased to hear from you.

Call Barry Evans or David Scouse at IBL on Ascot 22286. IBL (Computers) Limited, Index House, High Street Ascot, Berkshire SL5 7JF. Telex: 847765.

International Computer Brokerage and Leasing

Systems have been sold to life insurance companies, banks, and collectors' offices, among others.

The complete supplier *RANGE*PRICE*DELIVERY*

TELETYPE 43KSR From £869 Also ASR and RO Models	LS120 120 cps terminal £1695	Anadex DP 8000 84 lpm printer From £575	ALSO AVAILABLE BCI Rotary Printer Teletype 43 Teletype Terminal Teletype 43 Teletype Terminal Teletype 43ASR Digital V100 VDU Laser Slegler ADM 3A Graphics VDU Lear Slegler ADM31 VDU from £809 Lear Slegler ADM42 VDU from £1149 Anderson Jacobson 211 from £197 Acoustic Coupler DLC3000 Paper Tape Terminal Tachyon 960 Range Microline Tachyon 816 Range Data Cassette
LEAR SIEGLER ADM-3A From £595 Also ADM-31 ADM-42	Lear Slegler 200 Series £1685 Heavy duty 180 cps printer	LA36 From £849	

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MICHIE'S PRIVATEVIEW

It's quite easy to believe the impossible.....



THE White Queen admonished Alice to believe three impossible things every day before breakfast. It sounds difficult, but is actually quite easy.

You just have to be careful to choose things which plenty of other people already believe, such as that Brand X washes whiter than white.

The hard thing to believe is not the impossible but the unbelievable. This is how I have always understood the story about the old lady in the Giraffe House of the Zoo.

When she said "I don't believe it!" she was obviously not complaining that the animal in front of her was impossible. Her difficulty lay in finding a way of fitting the apparition into her existing knowledge about the world.

Even the addition of new information to memory is conditioned by what is already there. Unless a compatible body of pre-existing belief is already present to provide "hooks", so to speak, on to which the new item can be attached, chances of assimilation are slim.

I once gave an American

house guest a copy of Brian Randell's book "Alan Turing and the origin of digital computers" (Machine Intelligence 7, 1972). This paper revealed for the first time that high-speed electronic computers had been operational in Britain under war-time secrecy some years before the US post-war invention of Eniac.

Next day my guest enthused about the paper, so I innocently asked him if he had learnt anything new from it. "I certainly did!" he replied, but then trailed off vaguely.

Since there was absolutely nothing in his pre-existing structure of knowledge and belief into which the new fact could be fitted, what had happened was only what cognitive psychologists would predict: lacking a hook, the new material had failed to be transferred into long-term memory.

People say of such a case: "There's none so blind as those that will not see!" but they miss the point. However hard a man tries to memorise, if previous memory contents are not set appropriately he is

likely to fail.

Even with "seeing", unless large bodies of visual knowledge have already been amassed, a man in possession of healthy eyes will not "see" what is in front of him.

Partly, these problems of perception and belief are no more than the difficulty of fitting things before you have established file categories for them. Partly they may be related to the fact that our species evolved in slow-changing environments which put a low premium on the ability to assimilate drastically new experience.

That is why I and others tighten seat belts as information technology remorselessly accelerates, hoping that the pilot and navigating staff in the Cabinet Room are taking in what is happening with appropriate alacrity. For it is not only belief and memory which are disabled if mental models are not updated fast enough. Comprehension itself, which should be the tap-root of remembering and believing, can utterly fail, however simple the basic facts seem to be.

Let me illustrate by uttering an assertion designed to be 1. Impossible to understand; 2. Impossible to remember; and, 3. Impossible to believe.

Assertion: Most academic scientists who discover things of use to industry are making the most unpatriotic possible use of their time and talents.

This appears to be dangerous nonsense. Indeed it would be dangerous nonsense if (but only if) a certain old-fashioned assumption of UK economic life still held, namely:

Assumption: Annual investment in new processes and plant is sufficient to absorb the existing rate of domestic innovation.

When Sir Alan Cottrell retired as chief scientific adviser to the Cabinet he published a number of analyses to explain why the boost to British R&D from Tony Benn's "white-hot technological revolution" had no perceptible effect on the modernisation of industry.

Our national rate of annual investment in industry of six to seven percent is so low relative to other nations (Japan's is over 30%) that there is no prospect of incorporating even the numerous innovations and discoveries lying around already, let alone picking up the new stuff.

The latter, however, can perfectly well be picked up from the open technical literature by other nations, so that UK-based brain power ends up fuelling the industrial engines of our competitors.

Cottrell's facts have not been disputed. So possibly at length the penny will drop. Meanwhile I draw a humble, and perhaps reassuring, moral for one of the UK's more promising field of innovation.

Robotics is now to receive encouragement from a number of government agencies. Here at least there has been little pipe-dreaming about renovating UK manufacturing with UK-made robots.

With present investment rates this can't be done.

But there is a lively awareness of the possibility of a new light manufacturing industry for the UK geared to sell robots to the heavy industries of the rest of the world.

SOFTWARE FILE Enhancements to Com-plete include remote support

WITH the latest release of its Com-plete TP monitor, Adabas Software is able to offer remote software diagnosis not only to users of Com-plete but also to users of the Adabas database management system.

The release, Version 3, in addition enhances many of the functions and facilities of the monitor and its integral program development system.

The remote support capability gives Adabas software engineers immediate access to installations that can provide a dual-type teletype port on their 370X or compatible transmission control unit. Almost any software problem can thus be investigated quickly without the need for a site visit.

Among entities that can be examined are memory and memory dumps, JCL, user programs, control blocks, and system queues. Security mechanisms are included which prevent unauthorised access to the user's data.

The facility is implemented as an integral part of Com-plete Version 3, but can also be installed at sites which have Adabas alone.

One of the major enhancements to the monitor itself is native mode VSAM support, eliminating the need for special colls. The release also increases the maximum thread size (to 252K) and provides activity-traced thread scheduling to improve performance.

Other enhancements include additional debugging facilities for high-level languages; new facilities for cold, warm, and hot restart; and new device support.

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Interfacing is simple, the unit being compatible with the proposed ANSI standard. All electronics are incorporated onto a single PCB using J components - which means no worries about either spares or servicing. Trust Perlec to make such a sophisticated unit so simple!

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PERLEC COMPUTER CORPORATION

SOFTWARE FILE-2 Speed is the key in Sligos interpreter

AN IBM-compatible APL system for the Digital Equipment DECsystem 10 has been developed by CAP's French software house partner Sligos. Called APL-S, it is being used by Sligos to support a time sharing service and will be accessible via the public packet switching network Transpac.

A key feature of the new implementation is its speed. The interpreter runs under a special real time operating system. It is handling large file systems and database applications.

Among the facilities it offers are multiple concurrent user access to files; dynamic workspace allocation; detached mode execution and tools for text processing.

At the same time, the language is sold to be compatible both with the existing Sligos version based on APL and with IBM's VS/APL.

Sligos has a long history of APL expertise, beginning with the establishment of an APL partition on its 360/85 in 1970. In 1971, it became the first firm to offer an APL service in France and by the following year had a 360/50 entirely dedicated to APL.

At the same time it began work on the enhancement of the system, notably with the introduction of split files and new language primitives, such as Emerge.

By 1976, it had two 360/50s dedicated to APL and had also completed the development of APL 80 for the CII Iris 80.

In the last few years, it has seen APL usage expand by more than 50 per cent per year, and is counting on the performance of its APL-S system to support the potential market opened up by Transpac, to support continued strong growth.

PROGRAMMER NOTES

'Basic not easier to learn than Algol-type language'

FRESH ground has been broken in the long-running dispute over the virtues and deficiencies of Basic.

The latest combatant, E. W. Watson (Letters, January 18), shifted the area of battle to the dual questions of standardisation and the ease with which the language can be learnt, while also losing some barely concealed barbs into the academic camp.

Now bottle has been joined again by J. A. T. Maddison, of Thomea Polytechnic, with his third contribution on the subject.

Maddison begins by noting that he never intended to imply that the common use of interpreters gives Basic any superiority, a point that he made forcefully in his first letter (Letters, November 16, 1978). He goes on to question the advantages claimed for the language by Watson.

"I must admit that I am coming, through experience, to the conclusion of writing non-trivial programs and ease of reaching a sufficiently high probability that they are correct above ease of learning a language."

"However, having taught both, I feel that, on a language, Basic is not significantly easier to learn than an equivalent subset of an Algol-type language."

"The need to control the algorithm to fit Basic's control structures balances the traces of more powerful constructions

BS drafts published

DRAFT British Standards for both Coral 88 and RTU/2 have been published by the BS. Public comments have been invited and should be sent before February 28, 1979, to P. S. Wells, Secretary to OPE/13 British Standards Institution, 2 Park Street, London, W1A 2BS. In the case of Coral, the draft is also being circulated by the International Standards Organisation (ISO) which has accepted the language as a candidate for standardisation. The intention is that the UK and ISO standards should be technically identical.

Copies of the drafts are available at £1.50 each (£1 to BS members) from the General Office, BS, 101 Pentonville Road, London, N1 9ND.

Sharp expands APL service possibilities

NOVEL distributed processing possibilities have been opened up for users of the I. P. Sharp APL service with the introduction of an interface to IBM 8100 and 5110 desk-top computers. The facility allows any 51X0 system equipped with the serial I/O adaptor feature to sign on to the Sharp network as an intelligent terminal.

While so linked, the joint system supports two concurrently active APL workspaces: one on the 51X0 "guest" processor, and the other on the Sharp "host". Data, APL objects, and entire workspaces can then be exchanged between the systems.

One example given by Sharp is the passing of guest-entered

data to the host for processing, perhaps in conjunction with a public database. Results would subsequently be returned to the guest system for further analysis or formatting and printing.

More intriguing possibilities are raised by the facilities for passing control. A complete workspace, for instance, can be transferred from active or passive storage on one system to any desired location on the other.

A network can thus be supported in which any Sharp APL user can submit requests for processing on a guest system.

Payroll suite

A PAYROLL package written in Hewlett-Packard extended Basic is being marketed by Dunlop and Badenoch Computer Services. Designed for hourly paid staff, the suite includes full invoicing and sales ledger facilities. The firm is also implementing the package in Dilid for Gamma's Olympic range.

Free overview of library

AN overview of the process design software library it can offer to chemical engineers is provided in a new information pack produced by the Computer Aided Design Centre. Among major systems outlined are Multicol, Econolust, Concept, Keydata, and Symbol.

Copies are available free of charge from the Process Industries Group, CAD/C, Madingley Road, Cambridge.

CICS users speak highly of OLIVER.



DP Manager
"This revolutionary software package from Gemini really steps up productivity. And saves me money. Gemini OLIVER changes the responsibility for detecting errors from the programmer to the system. Potential corruptions are automatically trapped. What's more we can run live and test CICS programs in the same partition without worrying about storage or file corruption. We also save hours on debugging. I've got less downtime and more system availability for my users. I can't ask for a better than that."

Applications Programmer
"Gemini OLIVER facilities are outstanding. I get through testing much faster. Diagnostic information is further ranging than I'd have believed possible and includes full instruction trace, source facsimile display and statement number for my PL/I programs. Gemini OLIVER includes display and modification of any main storage location plus many other time saving facilities that I consider really revolutionary. Gemini OLIVER saves me hours of debugging in PL/I and COBOL. Many of the functions of Gemini OLIVER are just what I need to make my task easier and more efficient. I can reduce the time needed to get a new system operational quite significantly."

Systems Programmer
"What impresses me is that Gemini OLIVER is so easy to use... I don't have to spend hours sorting out other peoples bugs... Gemini OLIVER does it for me. My productivity has definitely increased because I can concentrate on my job without constant interruptions from applications programmers! Successful users are an ABC of computing: — Allied Breweries, Cameron Iron, David Brown Tractors... more than twenty in UK."

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The New Perlec FD650 Flexible Disk Drive

TWO HEADS ARE FASTER THAN ONE

The FD650 is a double headed disk drive which reads and records data on both sides of IBM Oskette 2 or 20 or equivalent media. The drive unit is capable of both single and double density operations (using for example MFM encoding). In the double density mode, it provides an immediately addressable unformatted storage capacity of 1.6 million bytes. Track-to-track access time is just 3 msec. Head load time is 35 msec and track settling time is 15 msec.

The FD650 offers accurate head positioning, uses rugged die-cast construction with an electronically locked door protecting the media while in operation.

Interfacing is simple, the unit being compatible with the proposed ANSI standard. All electronics are incorporated onto a single PCB using J components - which means no worries about either spares or servicing. Trust Perlec to make such a sophisticated unit so simple!

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PERLEC COMPUTER CORPORATION

Puzzler

EACH of these four diagrams has been formed by placing together edge to edge, two exactly identical shapes. Can you separate the two straight lines. See page 61 for solution.

...the ...

PEOPLE AND EVENTS

Reorganisation of Logica Group

CHAIRMAN of Logica Holdings, the UK company which will own the Logica computing and consulting companies, is to be Philip Hughes. Len Taylor is to be managing director. Hughes and Taylor have been senior directors of Logica Nederland BV and Logica Ltd since the companies were formed nearly ten years ago. Peter Harbridge and David Mann have been appointed chairman and managing director respectively of Logica (UK). Previously Harbridge was director of operations and Mann was director of the Advanced Systems group.

Further changes involve the establishment of Logica VTS, the word processing division of the company. The managing director will be Gordon Olson, and Pat Coen is to be chairman of Logica VTS. Olson was previously manager of Logica's computer control division. Other appointments within Logica VTS include those of five sales and marketing executives. Alan Pitt, formerly a systems manager with North Yorkshire council, Tom Buckley, Jeff Thomas and Tony Diment who used to be general manager with EMI Audio Visual services. Diane Duggan was previously general manager of manage-

ment services to the British Airports Authority. David Stubbs, a recent graduate, becomes a market research executive.

Alastair Crawford has joined Rediffon Computers as senior territory manager for the South-East branch. He was until recently senior territory manager with Burroughs. David Porter has become a senior systems analyst for the London branch. He was formerly a systems executive for ICL.

Harry Richardson has joined Informatics (UK) as systems engineer for the company's Accounting IV integrated financial software applications.



Duggan

Stubbs



Christopher Morgan is the winner of the 1978 Young Engineer for Britain award. The competition, first launched in 1977, was organised by the Department of Industry and drew support from international organisations including ICL, Ferranti and EPL International, whose managing

director David Rodway presented Christopher with SPL's prize of a £1,000 travel bursary. Pictured here at the finals at the NEC in Birmingham are (left to right) Sir Monty Finniston, Christopher Morgan, Lady Finniston, M. Tappan of Post Office Telecommunications and David Rodway.

Irel appointments

Lorenzo Bosio has been appointed vice-president of Irel International with responsibility for the Mediterranean region covering operations in France, Italy and Spain. He was formerly general manager for Irel Italy. Klaus Buscha has been named

as vice president, staff marketing for Irel International after working as director of leasing and broking for the company in London. Vice-president and general counsel is Edward Kling, who joined the company from the Los Angeles law firm of Buchalter, Nemer, Fields and Christie, where he was head of the International Law department.

Ayres to head new company

PORTABLE MICROSYSTEMS is a new company which is to specialise in the field of portable computer equipment, with a full range of products and services. Mike Ayres, founder of the company, was formerly a marketing manager with Plessey Microsystems. Portable Microsystems made its first public appearance at Microsystems '79, and is based at Brackley in Northamptonshire.

Hugh Findlow has become sales manager International for IAI Data Communications. He was formerly responsible for IAI's Medium data network management system sales. Taking over as data communications sales manager is Keith Sitch, who was previously in charge of IAI's data transmission equipment, and Reg Dudgey will continue to be responsible for sales of the division's manufactured aviation communications equipment.

Andy Galley has joined Cambridge Evening News as manager of its new DEC PDP-11/40 computer. He was previously a senior systems analyst with Portsmouth and Sunderland Newspapers.



Sharpe

Richard Sharpe has joined the newly created post of sales director. He was previously distribution manager at ICL's headquarters in Oxford.

Soccer

A MEETING to discuss the proposed Summer Computer League is held on February 12, in the room, Dorset House, Strand, London WC2R 2EJ, between 7.00pm and 7.30pm, and all companies wishing to enter teams must be representative along.

ICL chief dodges South Africa issue

"ISSUES of a moral type are not a matter for directors of a company" was the reaction of ICL chairman Tom Hudson to a question about ICL's position in South Africa. He was asked at the company's annual meeting in London last week. The questioner, Tim Webb, a national officer of the Association of Scientific, Technical and Managerial Staffs, wanted to know about the risks faced by ICL in concentrating a high proportion of its overseas marketing effort in South Africa as well as about the moral aspects of operating in that country.

Hudson said that ICL was aware of the risks involved in depending on business from South Africa, but pointed out that 80% of ICL's turnover from the African continent came from the Republic.

At the same time ICL was taking steps in withdrawing a reasonable proportion of its profits from South Africa to reduce the risk.

Answering a question about productivity, Hudson admitted that ICL was still well behind its US-based competitors, despite the fact that ICL reported a turnover of £15,000 per employee in its last financial year compared with £13,000 the year before.

He said, "We are investing heavily this year in machinery like circuit test equipment, but efficiency can only be achieved slowly by tens of thousands of decisions."

Asked about the money now being made available by the Department of Industry for microelectronic development projects, and if ICL was taking advantage of this, Hudson pointed out that ICL has appointed a senior manager to talk to the DoI about the possibility of ICL receiving a grant (CW, January 4).

"We are looking for grants, not loans," he stressed. Noting the absence from the platform at the meeting of Sir



HUDSON: "moral issues not a matter for directors."

John Clark and Mr Parry Rogers, both of Plessey, following that company's sale of all its right million shares in ICL. Hudson told the gathering that he understood that well over 100 City institutions applied for more than three times the shares available. "This is an excellent sign of the City's confidence in the future of ICL," he asserted.

Hudson's own departure from ICL will probably take place later this year when he is expected to retire as chairman (CW, January 11). His new role will be that of a gentleman farmer in Devon.

Falling costs

THE rapidly falling cost of computer equipment was the reason given in ICL shareholders by deputy managing director Murray Stuart for the company's policy of not issuing a supplementary financial statement showing inflation adjusted accounts.

Stuart pointed out that the bulk of ICL's capital equipment took the form of computers not on rental rather than machinery for manufacturing, and that an ICL study had indicated that the replacement cost of the computers was not increasing.



WHAT is claimed to be the largest milk processing plant in Europe, the Tont Molkerei in Zurich, operates entirely under a computer control system provided by APV of Crawley, and recently Prince Charles went along to see how this example of British technology works.

The plant produces, in addition to milk, whipping cream, coffee cream, yoghurt with various fruit fillings, ice cream, and desserts. Some 2,000 pieces of equipment, such as valves and pumps, are all connected to the computer, which is a humble Digital Equipment PDP-8. This machine also controls inventory control as well. Prince Charles is pictured sampling some of the combined products of British technology and Swiss cows at the Tont Molkerei (cherry) in Zurich.

Low-cost alternative to DEC disc drives

USERS of big Digital Equipment computers could soon be offered low-cost alternative to DEC's RP-04/05/06 disc drives in the form of the MSC-05 and MSC-06 disc subsystems from the Microcomputer Systems Corp., a US firm which has just set up a subsidiary in the UK.

Called MSC Microcomputers (Europe), the subsidiary is based in Sunninghill, Berkshire, and will start selling the disc subsystems in the UK when a legal problem in the US involving DEC's Massbus patents is cleared up.

The MSC subsystems are plug compatible with the Massbus controller, and MSC thinks that it may be used by DEC for integrating such a move by DEC. MSC has filed a federal suit to invalidate the five patents involved (CW, February 1).

£1 In February Could Save You Thousands All Year Round.

That's the cost of a ticket to The Energy Show, the exhibition on intelligent energy usage.

Nearly 150 exhibitors will be showing practical — and available — products, systems and services. All designed to reduce your fuel consumption and costs through increased efficiency and conservation. There's been a lot of development work in the last year or so and this will be the launch pad for many exciting innovations. Among the exhibits will be:—

THE ENERGY SHOW LUNCHES

A series of four special Energy Show Lunches is being sponsored by The Institute of Fuel, to give professional visitors to the Show not only a chance to meet others with like interest in convivial surroundings but also a unique opportunity to hear in person industry leaders talk about their attitudes to energy problems and the future of the industry. The distinguished speakers are as follows:

- 1) Tuesday Feb 20th
Sir Derek Ezra, MBE, Chairman, National Coal Board, Chairman, British Institute of Management.
 - 2) Wednesday, Feb 21st
Sir John Hill, Chairman, The United Kingdom Atomic Energy Authority.
 - 3) Thursday Feb 22nd
Sir Denis Rooke, CBE, FRS, Chairman, British Gas Corporation.
 - 4) Friday Feb 23rd
H.B. Greenborough CBE, President, Confederation of British Industry; Past President, Institute of Petroleum; Deputy Chairman, Shell UK Ltd.
- Only limited accommodation is available so early booking is advisable. Tickets are available from the organisers at £18.50 each, and will be allocated strictly in order of application.

THE ELECTRIC VEHICLE ASSOCIATION CONFERENCE

To be held at The Metropole Hotel adjacent to the exhibition on Thursday 22nd, the EVA one-day Conference is for an invited audience only. The conference is entitled 'Electric Transport in the 80's'. Fleet users requiring more details are requested to apply direct to Don Gribble, Secretary, Electric Vehicle Association, 80 Millbank, London SW1. Telephone: 01 884 2388

The Energy Show

National Exhibition Centre, Birmingham, England

February 19-25th 1979

Microprocessor-based control systems and programmers, waste heat recovery systems, boilers, burners and improved combustion techniques, insulation, solar systems, heat pumps, pipes and wheels, plus the power suppliers and many others.

PLUS MANY FEATURES

Including The Electric Vehicle Association display demonstrating the six facets of energy saving represented in electric traction systems

THE INSTITUTE OF FUEL CONFERENCE

Designed specifically for the professional looking for practical ways of cutting energy consumption and costs, each conference session comprises four presentations.

Tuesday 20th am 'Energy Planning; pm 'Control & Instrumentation' and 'Good Housekeeping'.
Wednesday 21st am 'Insulation; pm 'Alternative Sources'.
Thursday 22nd am 'Waste Heat Recovery; pm 'Heat Pumps'.
Friday 23rd am 'Industrial Energy — New Technology'; pm 'Industrial Energy — New Technology (continued)'.

Registration fee: £15 per session
£25 for two sessions

For complete details of The Institute of Fuel Conference and for the registration form for this and The Energy Show lunches and exhibition, either phone Sue Morris on Tavistock (0823) 4871 or complete this coupon and send it to Trident International Exhibitions Ltd., Abbey Mead House, 23a Plymouth Road, Tavistock, Devon PL19 8AU England.

Please send me the Professional Invitation Form

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Company
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DIARY

FEBRUARY 13
Systems thinking, Irel (Plessey) BCS meeting branch, 11, building, Liverpool Road, Brackley, 20.00

Computers in X-ray scanning — a breakthrough in diagnostic medicine, 11, building, BCS, Fairfield Hall, Croydon, 19.15

Future developments in information systems, K. Smith, BCS, Portsmouth Management Centre, Portsmouth, Hampshire, 19.00

Computer aided design of printed circuit boards, R. Bennett, BCS, Harlow sub-branch, Harlow Technical College, Harlow, 19.30

FEBRUARY 13-14
Meeting, IBM CUA Small Systems group, Holiday Inn, Slough, 14.00

FEBRUARY 14
Planning for the BCS response, BCS, BCS Local Government group, 14.00, 3, Buckingham Gate, London SW1 4JH. Limited attendance. Contact secretary on 01-228 2333.

World Processing, WPS N, London branch, West Lodge Park Hotel, Cuckfield, 19.45

Talking to the computer, W. Henshaw, BCS, Bristol branch/Institute of Management Services, St Vincent Rocks Hotel, Clifton, 19.15

IBM in NW Gas, BCS Manchester branch, Altrincham, 19.00. Limited numbers. Contact W. Baker on 0141-228 3471.

Film evening, BCS Teesside branch, The Polytechnic, Middlesbrough, 19.00

FEBRUARY 15
Public policy for microelectronics, N. Kingsley, BCS London branch, Waldorf Hotel, Aldwych, London, 19.00

First time users — exhibited innovations in absolutely ignorant? M. A. Jones and Ian Jones, BCS New or Potential users group, Heath Park Hotel, Hemel Hempstead, 19.30

Microcomputers — the electronic accountant? D. Waller, BCS Coventry branch, ICA, Warwick University, Coventry, 19.30

Computerized tomography, J. J. K. Boat, BCS, The Polytechnic, Preston, 19.30

FEBRUARY 15-16
Meeting, IBM CUA Operating Systems group, 19.00, 3, Buckingham Gate, London SW1 4JH

FEBRUARY 16-17
Which distributed system? Regent Cinema, London, Tel: Chis Smith on 01-228 3471

FEBRUARY 17-MARCH 1
Which distributed system? Regent Cinema, London, Tel: Chis Smith on 01-228 3471

FEBRUARY 17-MARCH 1
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Which distributed system? Regent Cinema, London, Tel: Chis Smith on 01-228 3471

FEBRUARY 18
Fountain 77, BCS Forum, 20.00, 12, Bedford Square, London WC1R 4EJ

FEBRUARY 19
Functional methods in computer design, Computer Design, 19.00, 1, Whitehall, London SW1 1BQ

FEBRUARY 19-21
Software auditing, Infotech, 19.00, 1, Whitehall, London SW1 1BQ

FEBRUARY 20
Communications sequential, 19.00, 1, Whitehall, London SW1 1BQ

FEBRUARY 20-21
Computing Services Group, 19.00, 1, Whitehall, London SW1 1BQ

FEBRUARY 21
A software packaged future — an getting value for money? Technology Processing Management, 19.00, 1, Whitehall, London SW1 1BQ

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World processing and hardware, 19.00, 1, Whitehall, London SW1 1BQ

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Workshop control by computer, 19.00, 1, Whitehall, London SW1 1BQ

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Getting into computing, for the tributive, 19.00, 1, Whitehall, London SW1 1BQ

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Applications of microprocessors, 19.00, 1, Whitehall, London SW1 1BQ

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Meeting, IBM CUA Operating Systems group, 19.00, 1, Whitehall, London SW1 1BQ

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Businessman's guides to office systems

TWO detailed guides to the choosing of small business systems and word processors have been published by Computer Guides, a subsidiary of Which Computer? magazine. Each guide gives lists of suppliers and several chapters of advice on how to go about the tricky business of selecting equipment.

The Guide to Small Business Systems' lists and compares more than 90 suppliers and 250 small system configurations. The comparisons take the form of easy-to-follow tables that cover areas like languages and software packages available with each system, online facilities provided, processor and memory features, peripherals and terminals available, and engineering support provided.

The Guide provides a lot of basic information about each small system supplier listed. The guide contains several chapters of text aimed primarily at businessmen, and includes explanations of technical matters like the basic features of small systems hardware, upgrading and compatibility, data communications and future technical developments.

The Guide to Word Processing Systems' similarly lists and compares 48 suppliers and 80 configurations from the crowded and confusing WP market. Tables show in some detail the differences in text editing facilities, types of screens, capabilities for upgrading and interconnecting to other gear, training available, and so on.

There are also several chapters on the principles of word processing, how to decide whether you need a word processor, how to go about choosing a machine, or a consultant, and work measurement. A table giving the corporate backgrounds of the suppliers is also provided, to let users judge their likely stability. The list of suppliers, inevitably in this fast-changing market, is already partly out of date, but is by and large admirably complete.

Both guides were edited by Ian Hugo.

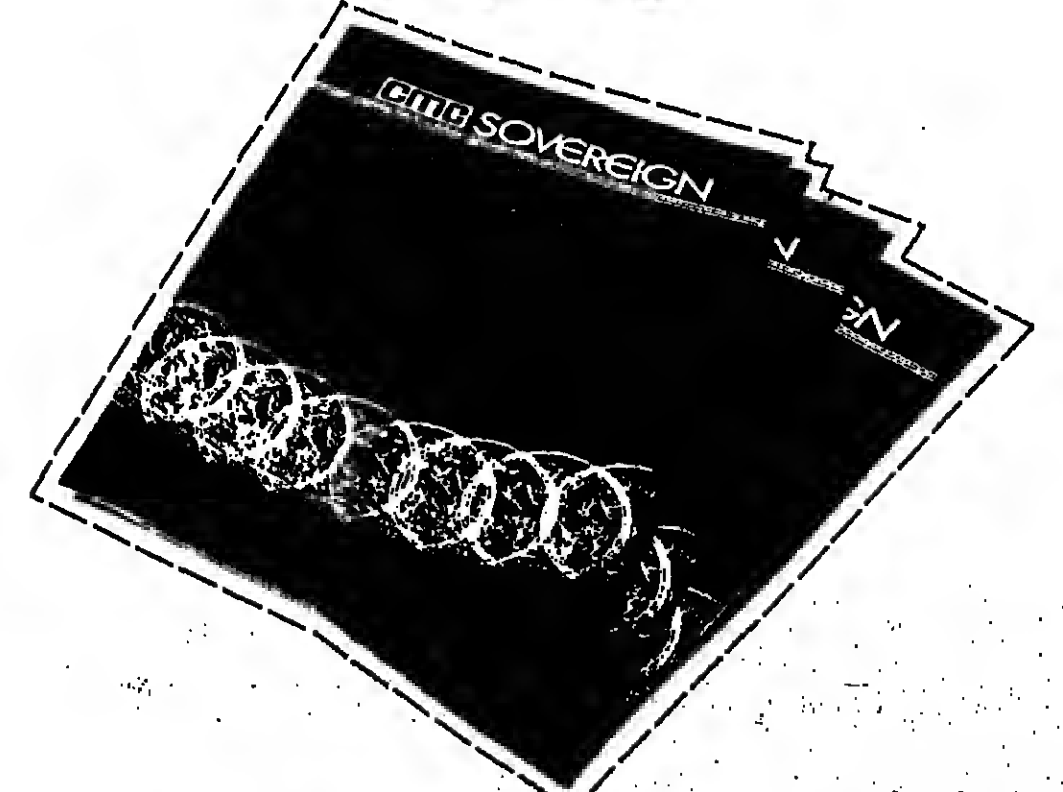
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CMC Data Preparation Distributed Processing Business Systems

Aug 11/15

Using a finger in place of light pen

IF the screen of a VDU is fitted with this transparent position sensor a finger can be used instead of a light pen or joystick in graphic or menu based applications. Called the E270, the sensor is manufactured in the US by Elegraphics Inc. of Oak Ridge, Tennessee.

The sensor has a conductive plastic layer on top of a resistive substrate, and a voltage is applied across the latter alternately along orthogonal axes. When the finger pressure is applied two voltages are picked off by the conductive layer at the point of contact and converted from analogue to digital by a control unit.

The resolution of the sensor is determined by the number of conversion bits used by the controller. Up to 12 bits can be used. Controllers are available to interface with a variety of computers and microcomputers and the complete E270 system costs \$1,500. Quantity discounts are available.



Ex-student charged with falsifying marks

A FORMER student at Queen's College in New York who also had a job in the college's computer centre, has been charged with falsifying the grades of 19 different students, including his own, in computerised academic records.

Another former student is charged with him with arranging the falsification, having accepted up to \$200 from those whose grades were falsified.

A lecturer at the college had noticed a discrepancy between

his own handwritten marks and those on the computer printout, and this led to investigation after which the grades were revoked and the current students disciplined.

One of the men, James C. new works for a New York electronics company, called other, Tom Tang, a New York machine salesman.

Prison terms of up to 10 years could be imposed on charges, which include falsifying business records and taking bribes.

Hobby show at the Palace

A NEW hobby electronics exhibition is to be held at London's Alexandra Palace in June.

To be known as "The Great British Electronics Bazaar" the show will be aimed at the amateur, hobbyist and small buyer. The organisers are the Egan Steadman Communications Group, which already has several successful exhibitions for the electronics and related industry. They aim to have up to 200 exhibitors.

As an amateur show, the cost of exhibiting will be high. With all stands identical, a fee of eight foot square will be £250. The organisers claim as no stand building and the frilliness will be allowed, should be the sum total of the many small companies, the may be less. Shared stands should be available for £30.

The three-day event, June 28 to 30, should attract at least 15,000 visitors, the organisers predict.

NEWS IN BRIEF

Talisman official start

FOLLOWING the announcement by the Stock Exchange of its charges for the Talisman computer based settlement system (CW, February 1), the Stock Exchange (Completion of Bargains) Act 1976 will be brought into force next Monday, February 12, formally allowing the introduction of the system.

Talisman cost £15.5 million to develop, of which £3.5 million has already been recovered. The remaining £12 million will be amortised over five years at an annual cost of £2.4 million. The running cost of Talisman will be £6.5 million so that the total cost per year during the first five years will be £8.9 million. The charges for Talisman have been set to recover these costs at 15,000 bargains a day, the average number since April 1977.

Rival to 370

PLUG compatible processors competing with the smaller machines in the IBM 370 series are to be sold in the US by Telex as the 1600 Series. The processors are built by Cambridge Memories, the firm that holds a 40% share in IPL Systems. The latter company manufactures the 370/138 and 148 compatible machines sold by Control Data as the Omega series.

For DG users

NOVA compatible products are now being offered on an OEM basis to Data General users by Real Time Control, the minicomputer systems house based at Crippen Park, Herts. The products include Mostek memories, a memory management/protection unit and a programmer communications multiplexer.

Racal buys share

IN an agreed purchase that values the company at £5 million, Racal Electronics has bought 85% of Microwave and Electronic Systems Ltd (MESL). Based in Scotland, the renamed Racal-MESL has three divisions, operating in radar, security systems, and microwave components. In particular microwave integrated circuits.

Fine Fare back-up

BACK-UP for Fine Fare's distribution and stock control system is to be provided by linking VDUs and printer terminals in its stores and depots to head office computers in Welwyn Garden City. Case 9,800 bps modems and multiplexers will connect terminals to the group's central Burroughs B4700 and B3700, and a Digital Equipment PDP-11/70 if one of the PDP-11s in its six major depots fails.

TUC warning over new technology

THE TUC recognises that developments in electronics are creating a late 20th century industrial revolution, but is determined to prevent it from trampling over the interests of working people, as its 19th century counterpart did.

This commitment was made by David Leo, assistant general secretary of the TUC, in his winding-up speech at the TUC Industrial Strategy Conference on electronics last week.

Earlier the Prime Minister, had emphasised the importance of the micro in improving the productivity of British industry (CW, January 25).

Leo went on to underline a point that had already been made several times earlier in the day, that the real risk-takers in any industrial revolution were the workforce. He agreed that developments in electronic technology did promise benefits to the economy, but stressed that the workforce must share in these benefits.

He specifically rejected the view which took large numbers of unemployed for granted as an inevitable consequence of electronic developments. He called for a positive plan to ensure full employment, and suggested that this could perhaps be achieved by examining the length of the working week.

It was important to see all these developments in terms of an overall economic and social plan, he continued. This meant involvement between the four levels of the economy: the government, the sector working parties, the corporations and the workforce.

Artificial intelligence seminar

A TWO-DAY seminar on the practical applications of artificial intelligence, which will look at many of the newer facets of the subject, is to be conducted by Donald Michie, professor of machine intelligence at the University of Edinburgh.

Organised by Intotech International, the seminar will take place on February 13/14 at the Regent Centre Hotel, London, and Professor Michie will discuss the computerisation of chess and how a grand master "sees" a chess position.

Other aspects will include meaning and knowledge, practical limits to computation, prototype knowledge refineries, and the social implications of artificial intelligence.

Donald Michie has published many books and articles on AI, and perception and is a visiting lecturer in the US and the Soviet Union.

Are you still locked in by that micro chip bargain you bought a year ago?



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TIM PALMER LOOKS AT THE IMPACT OF IBM'S 4300 SERIES LAUNCH

3030 prices set to tumble again

PURCHASE prices for IBM's large-scale 3030 series processors look set to tumble some time this year following announcement of the 4300 series, causing even more problems for IBM's competitors. So believes Aharon Orlansky, vice-president with New York stockbrokers Oppenheimer & Co.

"The price per chip on the 4300 series is 40 to 50% lower than on the 3030 series," he told Computer Weekly. "This will suggest to many users that the pricing structure on the 3030 is shaky, and they are likely to hold off orders in anticipation of price cuts."

Des Lee, chairman of the IBM Computer Users' Association in the UK, echoed this. "We were expecting replacement for the 115 and the 125, but this announcement kills the 148, and one user is talking of cancelling his 3031 order and getting a 4341 instead," he said. "The prices are about a quarter of those for the 3031. It really wipes out most of the existing companies, and will hit (ed and) the CDC Omega particularly hard."

One feature of the dramatic change in the pricing structure is in the memory. In the US it is priced at \$15,000 per Megabyte, compared with \$70,000 per Megabyte on the 3030 series. UK prices are higher but comparable. This erosion will clearly make life very difficult for the add-in memory manufacturers. As with the 138 and 148, the ratio of lease to purchase prices for the 4300s implies a short lifespan for the present hardware. In the US, the selling price is written off over 33 months of straight monthly rental. In the UK, the multiplier is even shorter: 33 months.

Orlansky sees this as a reflection

of the gathering pace of semiconductor technology development.

"There was a factor of two improvement in price performance over the five years between the 370/188, first delivered in July 1973, and the 3033, first delivered in April last year. It looks as if that five years for the same price has now fallen to three years," he said.

As well as offering an alternative to IBM's 8100 distributed processing system (CW, February 1), the 4331 directly emulates GSD's System 38. It is said that GSD salesmen were decidedly crestfallen when they learned just how attractive the new product was, but for the



This 4341 configuration includes, in addition to the processor, two consoles, a 3203 Model 5 printer, 3340/44 disc drives, 3420 tapes, a 3803 control unit, a 3505 card reader, a 3825 card punch, and the 3880 disc controller.

user, the question is which to choose.

Other things being equal, Orlansky recommends the System 38-type user to go for System 38 on the grounds that there is no relational database, only DL/I, on 4331 at present.

Lee is less certain. "Why not order both and let the two IBM sales teams fight it out? System 38 deliveries are still some way off, and Control is likely to have been added before anyone ordering now would get delivery."

Both are agreed that there are more 4300 models in the wings. Orlansky expects one between the 31 and the 41, and another above the 4341, while Lee believes that 4321 and 4351 models are the most likely.

"It looks to me as if DPD and GSD are preparing for a complete divorce, which means that DPD products will have an even lower starting point."

"The structure of the machines also makes attached processor or multiprocessor versions straightforward to configure," he noted.

Overall, Lee confesses to being "absolutely amazed." "We are harking in the sunshine of IBM's price cuts. We have had a list of IBM price adjustments on other products, some up and some down, and the consensus is that they are very reasonable."

Commenting on the new 570 Megabyte 3370 disc drive, Lee noted that it had simultaneously been announced for the System 38. "It offers 3850-type mass storage capability to lower end users, with a fast transfer rate."

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18,240 Megabytes of disc store possible

PERIPHERAL products announced for use with the 4300 series include two fixed disc drives and the tape drive already announced for use with the 8100 distributed processing system.

The new 3370 disc unit is the largest capacity drive yet introduced by IBM, offering fixed storage of 570 Megabytes per spindle. One to four spindles per string and one to four strings can be attached to each controller on the 4331, giving maximum backing storage of 9,120 Megabytes.

Disks are attached to the larger 4341 via a new Disc Storage Control Unit called the 3880, which has two data paths, each capable of supporting up to four strings of spindles, which can be either the new 3370s, or the 3340 or 3344 Winchester technology drives. This gives a formidable maximum capacity of 18,240 Megabytes.

The other new disc unit for the 4331 is a special packaging of the 84 Megabyte disc for the System 38, System 34 and 8100. Up to four spindles per string and up to four strings can be attached for a maximum 1,032 Megabytes. Called the 3310, it is a low-cost device designed for database

IBM support plans a further blow to rivals

AS well as making life tough for IBM's competitors on the hardware pricing front, the support plans announced by IBM for the 4300s will make it difficult for other manufacturers to match IBM's service, believes Oppenheimer's Aharon Orlansky.

"IBM appears to have decided that the low end of the market is not penetrated with low prices and tightly packaged hardware designed to be simple to support."

"It has put together a very reliable design, showed profit margins on hardware, and seems to be planning to offset the lower margins with significantly better productivity in its support effort."

"Users will have to weigh this against the support offered by other companies. IBM is making up its margins on greater efficiency in its marketing, which is something its competitors are not geared up to do," he said.

IBM's new approach to software support centres around the establishment of new IBM Support Centres, with an optional (paid for) Local Program Support service.

Users who run into problems with their operating systems or with licensed system software will first telephone the Support Centre, where personnel will give free advice which IBM hopes will solve most problems.

If this fails, customers will be able to get on-site support, paid for either on a per-visit basis, or under a monthly agreement.

The Support Centre should be fully operational in the UK by the end of the year, and the associated new programming service plan will come into effect on January 1, 1980.

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In the reasonably simple world of small programs - say, 512 words - price is still a pretty good criterion.

But once you're up in the 4K/8K numbers, there are a lot more important questions to ask.

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COMPUTER OPPORTUNITIES IN SCOTLAND

An expanding industry North of the Border

WHEN talking to DP staff about a career in Scotland one is reminded of the two shoe salesman sent to central Africa in 1925. One called his company saying "No potential — nobody wears shoes" while the other said "Fantastic opportunity — nobody wears shoes."

Many DP staff seem to regard Scotland as a waste land with no development, old hardware, obsolete systems and poor salaries. However, the more enlightened professionals can clearly see and seize the challenges and the opportunities which are being presented.

Computing North of the Border is in many ways no different from that in the rest of the UK, but in other respects reflects commercial development and problems which are peculiar to Scotland. To understand the state of the nation it is necessary to examine the past.

A large proportion of industry is situated in a narrow belt bounded by Dumfries, Falkirk and Perth in the north and Irvine, Hamilton, Motherwell and Dalkeith in the south. Manufacturing companies are more concentrated in the west near the Clyde with its shipyards and Atlantic shipping routes, while banks, finance houses and Civil Service installations are more frequent in and near to the capital.

Many companies are relatively small, and a high percentage have been slow to use in-house computers — a fact which is all the more amazing when one considers the manufacturing presence of Motorola, Burroughs, Honeywell, IBM and ICL. There is a strong bureau sector which has enabled many companies to gain first-hand experience while avoiding first-time users' mistakes. Over the past few years the various regional councils and the Scottish Development Corporation have invested heavily in new industrial areas and in attracting new businesses to a wider range of towns, with the result that one finds an increasing number of overseas companies opening subsidiaries.

traditional and engineering industries has led to the implementation of batch systems.

In the past two or three years, however, there has been a radical change, a change which is only partly due to the advent of North Sea oil. The introduction of new technology leading to third generation hardware, the increasing power of the mini, the growing use of the micro (all of which contribute to lower cost/performance levels), have enabled management to tackle the need to reduce stock levels, increase productivity and improve

management, administration and manufacturing controls. In order to achieve more competitive unit costs.

Salaries have improved and, with more car owners, people are more mobile and have a greater choice of job opportunities in about 750 installations which now operate. While it is difficult to quote a precise figure at present, there are probably in excess of 400 vacancies for operators, programmers, analysts and managers throughout Scotland, and most installations with eight or more staff could justify employing one extra person.

Having examined the general picture, we can now identify one or two specific needs. Sales of new machines in Scotland are very healthy and many of the hardware manufacturers have requirements for pre- and post-sales support staff and/or people with conversion experience.

While the increased use of micro is becoming more evident, there is no sign that the bureau service sector is decreasing. These companies, like the manufacturer, recruit people who can identify the needs of the user, often in widely differing sectors of industry. Many users are moving from batch to online, and 1979 in Scotland was recently described as "the year of the VDU." There is a need for people with experience of CCP, Driver and other communications software and TP monitors, and there is a growth in the use of database management.

Programmers with 12-15 months' experience can start on £3,700-£4,100 and salaries then progress to senior analysts earning up to £7,500.

But changing jobs is not only about more money, job satisfaction or acquiring new skills; equally, it involves moving house, making new friends, maintaining one's standard of living and enjoying the same or fresh leisure pursuits. Scotland presents certain differences from other areas but in return has much to offer.

One major difference is that traditionally more people have lived in and have purchased flats. One often hears references to "tenements" in cities like Glasgow and Edinburgh. These are not the slum buildings of, say, London, Birmingham or Leeds, but could even be modernised luxury apartments. Prices for smaller properties can start as low as £5,000.

Recently there has been extensive renovation of older buildings paralleled by an increase in the building of private houses. Until this happened, property in Scotland tended to be in and around the price range more typical of London and the Home Counties. Modern housing, by nationally known firms is now available from about £13,000.

In terms of leisure Scotland has everything to offer. One has the choice of manufactured entertainment by way of night clubs, theatres, restaurants (ethnic or traditional), cinemas, touring pop stars, art galleries, museums, discos and pubs, although in some of the smaller towns these facilities are limited.

If, however, you want to get away from all this and do your own thing then there are some well-equipped sports centres and sports clubs, and Scotland's natural attractions. Twenty minutes from the centre of any Scottish city even at the rush hour, one can be deep into some of the most beautiful countryside in the UK.

Industry is expanding, and development of computerised systems is only being held back by a shortage of people. No matter what their skills, analyst or programmer, or whether they want to work for a user, manufacturer, bureau or software house, the opportunities in Scotland are significant.

Anyone who takes up the challenges of Scotland will enjoy a way of life equal to anywhere in the UK, and better than many.

University of St. Andrews
Computing Laboratory
Applications are invited for the above post of

COMPUTING OFFICER

in the User Services group of the Laboratory. The person appointed will participate in all the activities of the group, which include applications programming for other University departments, writing user-oriented documentation and giving advice on the use of the various computing facilities.

Locally available batch and time-sharing facilities are provided on the Laboratory's IBM 360/44. External services are available on a Honeywell 66-80 and a DEC System 10 from within a network of Universities in North East Scotland. Access is also available to an IBM 370/155.

Applicants should possess an honours degree, or equivalent qualification, in a demonstrable aptitude for programming in a recent language (e.g. COBOL, PL/I, BASIC, FORTRAN, etc.) and a minimum of two years' experience, plus a good knowledge of the use of the various computing facilities.

Further particulars can be obtained from the Establishment Officer, The University, College Gate, St. Andrews, Fife, with whom applications and the names of three referees should be lodged by Monday, 18th February, 1979.

UNIVERSITY OF STRATHCLYDE

Applications are invited for TWO posts of
COMPUTER PROGRAMMER
in the
MANAGEMENT SYSTEMS DIVISION
of the
UNIVERSITY ADMINISTRATION

The posts will involve programming in COBOL for both new systems and the maintenance of existing systems. The successful candidate will operate a Honeywell 8600, 256K tape/disc system which provides both batch and interactive processing facilities throughout the University. The appointments will be particularly suited to candidates with 2-3 years' programming experience and preferably with graduate or other qualifications in Computer Science.

Salary scale on Grade 1A of the national salary structure for senior Administrative Staff: £3,384-£3,858 (under review) with rising according to qualifications and experience. Superannuation benefits.

Application forms and further particulars (including 11/79) and enclosing a self-addressed envelope (9" x 4") may be obtained from the Academic Appointments Officer, University of Strathclyde, Royal College Building, 104 George Street, Glasgow G1 1RN, with whom applications should be lodged by 28th February, 1979.

HERIOT-WATT UNIVERSITY

Department of Electrical and Electronic Engineering

RESEARCH ASSOCIATE (COMPUTER/LIBRARY SCIENCE)

A vacancy has arisen for this two-year appointment on a research project into the applications and use of special purpose associative databases. Special purpose hardware is being built and interfaced to a PDP-11 computer and applications are invited from any persons with research experience in the computer software or library science fields who wish to participate in this advanced project in state-of-the-art information systems. Applicants should possess a degree and research experience in the computer or library science field.

Salary in the range £3,993-£4,631 per annum (under review). Informal enquiries may be made to Dr. P. W. Faulk, telephone 031-225 8432 ext. 138. Application forms may be obtained from the Staff Office, Heriot-Watt University, Chambers Street, Edinburgh EH1 1HX. Ref. 32/79.

SCOTLAND 1979

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Information enquiries may be made to Dr. P. W. Faulk, telephone 031-225 8432 ext. 138. Application forms may be obtained from the Staff Office, Heriot-Watt University, Chambers Street, Edinburgh EH1 1HX. Ref. 32/79.

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Inverclyde District Council was anxious to recruit a number of graduates to the Inverclyde District Council, Glasgow, the coastal resort of Greenock and the surrounding green belt areas of Inverclyde, Wemyss Bay and Kilmear.

We are looking for someone who can combine a background of at least 2 years' programming with a knowledge of DOS/V5 and some systems experience. The person appointed will be required to carry out systems development from specification to programming.

The Council has a stock of IBM 370/155 running under DOS/V5 with 1741 1111 terminal. An input is from 3740 diskette. The major programming language used is RPGII. The Council provides a service by direct line to adjoining districts. Salary will be dependent on qualifications and experience. Assistance may be given with housing and to the spouse (see Council's Information Leaflet No. 42). For further details and application forms, apply to the Personnel Officer, Municipal Buildings, Greenock PA15 1LY. Telephone 0475-24400. Extension 266. Completed forms must be returned by 14th February 1979.

Application forms and job descriptions are available from the Chief Personnel Officer, Municipal Buildings, Greenock PA15 1LY. Telephone 0475-24400. Extension 266. Completed forms must be returned by 14th February 1979.

Inverclyde district council

CRAG ROOM PROBLEM

Our problem is that we are looking for one of the above. If you can't work out the anagram don't worry, read on.

WE ARE LOOKING FOR SOMEONE WITH:
A level standard education, at least 2 years' commercial experience and on-line experience.

WE OFFER:

Varied work with a number of different languages and software packages, and attractive salary, excellent working conditions and fringe benefits and low cost housing in a picturesque area.

We currently run batch processing by RJE with an ICL 2803 linked to a 370/158 in California. We are developing an on-line order entry system using TSO linked to the 370/158. In addition we provide software support to our other European subsidiaries.

This is an ideal opportunity for someone with on-line experience to provide their worth, or for an experienced Cobol Programmer to broaden their knowledge.

If you are interested, please write giving brief details to The Industrial Relations Manager.

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You'll be working in the Glasgow area. If you're a Systems Analyst with your feet firmly planted in one boring spot — this is the ideal opportunity for you to consolidate your career experience.

The next step

Telephone Janet Field on 01-572 7455 or write to the address below for an application form.

Data General
Data General Limited, 3rd and 4th Floors, Hounslow House,
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NCR

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Name
Address
Age
Qualifications
DP Experience

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Tel. Blantyre 828800

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Up to £6,500 p.a.

Conditions of employment include 35 hour week, paid overtime at premium rates, the possibility of U.S. travel, subsidised canteen, generous relocation allowance where appropriate, and pension plan. Software Development is an expanding activity at NCR Dundee: promotional and career prospects are excellent, with professional development training to aid your advancement.

If you are a graduate and are interested in applying for one of these positions, please send brief details of your degree and experience to:

Ian Hume, Personnel Services
NCR Ltd., Engineering & Manufacturing,
Freeport, Dundee DD1 9XW.

IBM SYSTEM 3/15D

The Data & Wilson Group Ltd. is a leading company in the industry supply and book selling industry with head offices located in central Scotland.

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to undertake development of a range of batch and on-line systems and with the capability of duplicating for the D. P. Manager. The successful applicant will have a minimum of 3 to 4 years' programming experience.

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Please contact:
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Data & Wilson Group Ltd.
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The Society has a 370/115 running under DOS/VS with CICS and on-line programming. We are looking for someone with relevant systems programming experience to assist in the maintenance and development of our on-line systems. Application programming experience in Assembler, COBOL or RPG would be an advantage.

Conditions of service include a non-contributory pension scheme, house purchase facilities and flexible working hours. Starting salary would depend on experience and ability.

For further information phone our Data Processing Controller, Leslie Grey, at 041-248 6321 or apply in writing, giving details of experience and present salary to:

W. McCordingle, Esq., Secretary
The Scottish Mutual Assurance Society
108 Vincent Street
Glasgow G2 5HN

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Informal interviews will be conducted in London in a few weeks. Appointments may be made by writing as soon as possible with a curriculum vitae to Payroll Consulting Services Inc., 39 Ikon Square, San Francisco, California, 94110, U.S.A.

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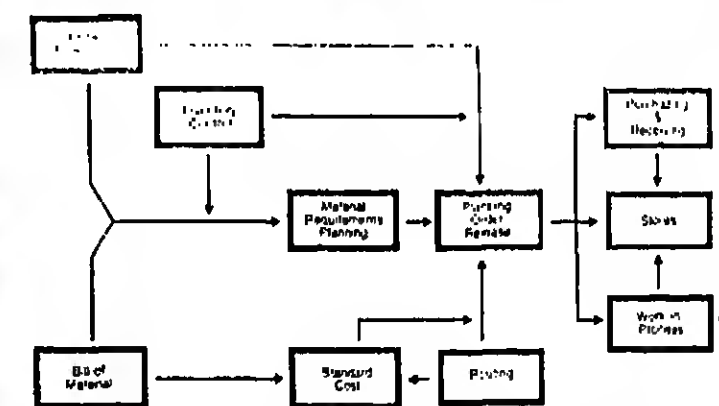
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(Ref G 1511/CW)

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The UK Data Centre is responsible for the processing of data and the development of successful computer systems throughout the UK. Current installed hardware consists of an IBM 370/115 with card reader, punch, line printer, 2 magnetic tapes and 4 disk drives, operating under DOS/VS and POWER/VS. ANS COBOL is the main programming language. An on-line data transmission link is also installed.

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ANALYST/PROGRAMMERS

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Uniroyal offers a competitive salary, first class working conditions, fringe benefits, including relocation expenses where applicable. Equal consideration will be given to applicants of either sex.

Please write with details of experience, qualifications, age and current salary to: Mr L W. Cole, Personnel Manager, Uniroyal Limited, Nowbridge, Midlothian EH26 8LG.

UNIVERSITY OF GLASGOW COMPUTING SERVICES SYSTEMS PROGRAMMING and ADVISORY STAFF

Vacancies have arisen for a total of four posts within the University's Computing Service, which operates a large ICL 2978 computer running simultaneously both batch processing and interactive (IMAO) work under the VME/Operating system.

Applications are invited from candidates holding for the year 1978/79 a university honours degree or equivalent, and with appropriate experience of computing, for appointment as Programmer or Analyst on the Grade 1A or 1B scales for Other Related academic staff, the salaries for which range from £13,635 to £15,585 and from £8,317 to £9,784, respectively (under review). Initial placement would be dependent upon age, qualifications and experience.

Knowledge of the VME/8 operating system is not essential, although it would be of advantage. The two systems programming posts might be suitable for recent or prospective graduates in Computing Science, who have an interest in operating systems and programming in lower level assembly languages. The two programming advisory posts require a knowledge of at least two high level programming languages, in interest in delivery, consultancy and related industrial services, and a great experience of applications programming.

Further particulars may be obtained from the Secretary of the University Court (Room 10), University of Glasgow, Glasgow G12 8QQ, where applicants (8 copies), giving the name and address of three referees, should be lodged on or before 15th February, 1978.

In reply please quote Ref. No. 4381P.



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GLASGOW Sub-Region

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A successful candidate will have a minimum of 5 years' experience in the design, development and maintenance of computer systems. The successful candidate will be responsible for the design, development and maintenance of computer systems within the region.

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A successful candidate will have a minimum of 5 years' experience in the design, development and maintenance of computer systems. The successful candidate will be responsible for the design, development and maintenance of computer systems within the region.

Further particulars and application forms may be obtained from the Administrative Assistant (Establishment), Dundee College of Technology, Bell Street, Dundee DD1 1HG to whom completed applications should be returned by 26th February 1979.

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SENIOR PROGRAMMER

(£4959 to £8025 per annum)

Applications are invited for the above post which requires considerable programming experience. The successful candidate will be required to assist systems designers with life and programme specifications, to write programme and to control a number of programmes within a project team.

The Computer Service Unit is located in central Edinburgh and handles a variety of medical, financial and administrative systems for the Lothian, Fife and Borders Health Boards. The hardware is an ICL 1903T running under George II, with input mainly from CMC 5200 key-to-disc units located locally and at several remote sites.

The main programming languages are COBOL, FORTRAN and FILETAB with some FORTRAN. Programme development makes use of ICL's MAXIMOP on-line system via an ICL 7502 teleprocessor.

Application forms and further particulars are obtainable from the Personnel Officer, Lothian Health Board, 11 Drumheugh Gardens, Edinburgh EH3 7QG, to whom completed forms, quoting Ref. LHB 0325, should be returned by FRIDAY 18th February, 1979.

Tayside Regional Council

FINANCE DEPARTMENT

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£4389-£5603 inclusive. (Ref. 549/78)

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Commencing salary will largely depend on your experience and qualifications. The post is permanent and superannuable in a modern office with flexible working hours. Closing date for receipt of applications is 21st day, 23rd February, 1979.

Application forms are obtainable from, and returnable to, the PRINCIPAL PERSONNEL OFFICER, 15 Albert Square, Dundee. For enquiries, telephone Dundee (0382) 23241 Ext. 3457. Candidates of either sex may apply.

Handwritten signature or note.

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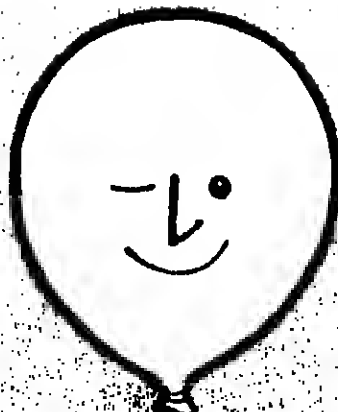
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PLUS MAJOR COMPANY BENEFITS INCLUDING FOR SOME LEVELS A COMPANY CAR, AND STRUCTURED CAREER OPPORTUNITY

Our client is implementing a new generation of computer systems. This is based on a variety of Mini-Computers which form the nucleus of a nationwide distributed intelligence network, linked to a complex of mainframes within the U.K.

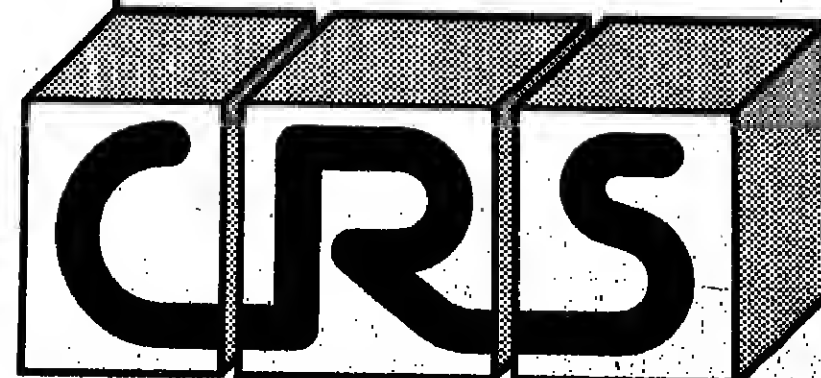
All computer development is centralised through the Systems Services Department based in London. Due to continuing demands for the department's services, additional D.P. Professionals are required to extend the services into new functions and areas.

SYSTEMS ANALYSTS - With sound academic qualifications and some 3 years' plus experience in systems design, preferably in a commercial environment. There are further opportunities for Analysts or Analyst/Programmers with less experience.

PROGRAMMERS - At various levels of experience are required up to senior positions with some 3 years Cobol and supervisory experience. A working knowledge of a second language such as RPG or Fortran would be a valuable asset.

Actual starting salary will depend on individual qualifications and experience however competitive salaries will be offered to successful candidates and supported by a substantial range of fringe benefits.

For further details and confidential discussion regarding these opportunities please telephone or write quoting reference 12/1CW.



COMPUTER RECRUITMENT SPECIALISTS

18 BUCKINGHAM PALACE ROAD, LONDON SW1W 0QP TELEPHONE: 01-828 1384 TELEX: 24891

BUPA, Britain's most experienced independent Health Care Organisation, is preparing for expansion. BUPACARE, a major new Health Insurance scheme launched this month, is supported by a database system which will form the basis of future systems development. The growth in the areas of database and office automation has created these exciting opportunities in the Data Processing division.

BUPA

THE COMPANY:

Market leaders in Medical Insurance, the British United Provident Association is a non-profit organisation now helping 2 million people in the UK to budget for private medical treatment.

LOCATION:

Pleasant offices in Essex St. WC2 (off the Strand) are easily accessible by both tube and British Rail.

HARDWARE:

Currently a 2-megabyte IBM 370/148 configuration with 3330s, to be replaced early next year by an IBM 3031.

SOFTWARE:

OS/VS1, ADABAS, CICS, LIBRARIAN/ONLINE, PL/1.

PROSPECTS:

Career progression is dependent solely upon your own ability with thorough training given where required. Continued company growth and a progressive D.P. department ensure many opportunities for advancement at an installation which combines a friendly atmosphere with first-class working conditions.

BENEFITS:

4 weeks' holidays
New restaurant and L.V.
Mortgage subsidy
Free life assurance & medical health insurance
Interest free season ticket loans
Pension scheme
Sports and Social Club

ASSISTANT DATABASE ADMINISTRATOR c£5550

An in-depth knowledge of IBM 370 Operations and JCL is a prerequisite for this newly created position working with ADABAS software. The ideal candidate will possess a good understanding of database techniques and some experience in a technical support role would be an advantage. He/she will be responsible to the Database Administrator for the maintenance of standards, the control of database software and facilities and for providing a service to personnel engaged in development projects. DAYS ONLY.

OPERATIONS ANALYST c£5550

This is an excellent opportunity for someone with a total of 1 years' data processing experience including 12 months in a technical support role. The successful applicant, who should be familiar with IBM Systems and OS JCL, will be expected to implement and maintain production systems, and will also be involved in the appraisal and selection of software packages. DAYS ONLY.

OPERATIONS TECHNICIAN c£5200

If you are conversant with IBM JCL and Utilities and wish to develop your skills in a technical environment, this is the ideal opportunity. Your main responsibilities will be to prepare and maintain production JCL, to monitor disk usage and to provide security backup for production files. A knowledge of LIBRARIAN would be an advantage. DAYS ONLY.

SHIFT SUPERVISOR c£5500

A minimum of 4 years' operating experience on IBM hardware, including some supervisory experience, is a major requirement for this position. Preference will be given to highly motivated and mature applicants who should be fully conversant with IBM OS/VS1 operating systems and have knowledge of OS JCL and Utilities. The Shift Supervisor will be responsible in the Assistant Operations Manager for the enforcement and maintenance of machine room standards, together with the supervision of a shift of 3 operators working a 3-shift system. Excellent prospects for career advancement.

COMPUTER OPERATOR c£4450

There is also a requirement for an ambitious young individual with a minimum of 12 months' IBM OS experience wishing to broaden his/her knowledge and benefit from the clearly defined career paths available within this well organised Data Processing department.



APPLY PROCEDURE:
If you would like to discuss any of the above positions, please telephone John Knapp on 01-637 3265 or write to Computer 2000 with details of your experience.

COMPUTER TWO THOUSAND
215 SOUTH HAMM COURT ROAD
LONDON W1P 9AF
01-637 3265/6

01-637 3265/6

NORTH WEST

LIVERPOOL SYSTEMS ANALYSTS £5,000
If you are seeking to expand your career in a professional environment then these positions are for you. The company has an enviable growth record and provides excellent training facilities.

LIVERPOOL SENIOR ANALYSTS £8K +
If you are an experienced analyst with a programming background, our client offers you the opportunity to work on real-time systems. You will find users sophisticated and professional. Exceptional fringe benefits.

MERSEYSIDE O & M ANALYSTS £8,000
Our client seeks O & M persons to join existing computer project teams. You will find the environment stimulating and your skills will be acknowledged and properly rewarded. Relocation available.

NORTH WEST SALES PEOPLE £12K +
A major manufacturer is seeking an experienced "New Name" sales person for the North West. You will receive a car and have an exciting product line to work on.

MANCHESTER CORAL 66 PROGRAMMERS £8,000
Our client has vacancies for experienced CORAL 66 programmers working on electronics/control systems involving micro computers. There is wide scope for you in this expanding field.

WEST MANCHESTER MINI SALES £8K +
A mini computer manufacturer with a very attractive and reliable range of hardware seeks an additional sales person of proven track record to work from his Manchester office. Generous car allowance paid.

MERSEYSIDE SENIOR OPERATORS £8,500
Our client is establishing a new installation and requires senior operations personnel. You should have large mainframe experience, be very competent and prepared to work hard for very high reward.

LIVERPOOL SHIFT LEADERS £7,000
Could you manage a shift in a multi-processor environment? If you have a good academic record and are ready for the challenge then our client has a vacancy for you. He will pay relocation and there is a bonus.

SALE ANALYSTS £6.5K
A software house has vacancies for experienced analysts with sound programming background. The company is expanding and you may be assured of a career of growth in this company of experts.

SALE PROGRAMMERS £5,000
COBOL or Assembler programmers are required by our client for a variety of interesting work. You will gain analysis experience if you are suitable and the only bar to progress is your own ability and competence.

For any vacancy West of the Pennines phone LEN CRAY on LEEDS 444185 (reverse the charges) or on LEEDS 687118 (evenings and weekends). Alternatively, write with details (no stamp required) to Lorien Computer Services, FREEPOST, LEEDS LS7 3YY.

YORKSHIRE & HUMBERSIDE

HULL SYSTEMS ANALYST £6,000
A medium sized installation has a vacancy for a systems analyst preferably with a programming background for development work.

HULL ANALYST/PROGRAMMER £5,500
Commercial analyst/programmer required for development of financial and stock control systems in expanding installation.

HULL PROGRAMMER £5,500
PL/I or COBOL programmer required by IBM DOS/VS installation to supplement existing teams. This is a responsible position in a dynamic group.

CONCASTER SYSTEMS ANALYSTS £8,000
A major installation in the area requires additional young analysts for an expanding manufacturing commercial situation. Relocation is available.

NORTH YORKS PROCESS CONTROL £5,800
Coral 88, RTL II, Assembler and ALGOL programmers would find our client's process control situation involving both MINIS and MICROS very exciting. Relocation available to this delightful part of the country.

WAKEFIELD PROGRAMMER £4,500
A COBOL programmer is required for this small ICL installation working on a range of commercial projects. Would suit a programmer considering his future move.

BRAOFORD COBOL PROGRAMMER £5,500
Our client seeks several additional programmers for this installation where the hardware is expanding. Your career can grow as the installation grows.

SHEFFIELD COBOL PROGRAMMERS £4,500
An established ICL installation has vacancies for additional COBOL programmers for both mainframe and commercial systems.

SHEFFIELD PROGRAMMERS £5K + Bonus
Our client has vacancies for commercial programmers, regardless of language or hardware. You will find variety and interest in a growing company. Substantial bonus is paid.

LEEDS O & M ANALYST £5,500
Experienced O & M person required to join computer development team. Work involves warehousing and distribution systems.

LEEDS SYSTEMS PROGRAMMER £5,700
Experienced IBM COS/VS systems programmer required for company in central Leeds. Alternatively, experienced IBM Assembler programmer will be considered.

LEEDS BASIC PROGRAMMERS £5K + Bonus
If you have BASIC or BASIC + experience then our client would like to hear from you. Variety of commercial work on DEC hardware in exciting environment.

LEEDS ANALYSTS (MINI) £6K + Bonus
If you can analyse/design real-time systems on mini computers then we have the positions available for you. Wide experience to be gained.

LEEDS ANALYST/PROGRAMMERS £5,500
A truly professional systems house seeks additional staff with a flexible attitude to systems development. This company is established and successful. Why not join it in North Leeds?

LEEDS COBOL PROGRAMMERS £5,750
Vacancies exist for COBOL Programmers - any hardware - with three major companies in Leeds. If you are not currently earning £5,000 then contact us to learn how to earn more.

LEEDS SYSTEMS ANALYSTS £5,500
Our IBM client in financial/commercial/manufacturing and distribution systems has vacancies at several levels for systems analysts including JUNIOR ANALYSTS.

EAST OF PENNINES HARDWARE SALES £12K
Experienced hardware sales persons for both mini and mainframe manufacturers are required to work East of Pennines. These positions include "new name" and "repeat" business situations.

For any vacancy East of the Pennines phone IRENE ROGERS on LEEDS 444185 (if daytime) or on WAKEFIELD 71810 (evenings and weekends). Alternatively, write with details (no stamp required) to Lorien Computer Services, FREEPOST, LEEDS LS7 3YY.

LORIENT COMPUTER SERVICES Recruitment Consultants

OCS House,
Servia Road, Leeds LS7 1NJ
Telephone 0532 444185
* (24 hour Ansaphone service)

BE YOUR OWN BOSS

An exceptional opportunity is available to a limited number of experienced, competent and ambitious programmer/analysts throughout the U.K. who have some minicomputer and business applications experience.

If you feel you have the ability and strength of character to own your own business, but are handicapped by only having limited capital, then write to us now with full C.V. address and home telephone number. All replies will be dealt with in the strictest confidence.

If you qualify for this scheme, very substantial finance and management facilities will be placed at your disposal for only a nominal capital investment.

High fliers contact us now at Box 1009, Computer Weekly.

BRYMBO STEEL WORKS LIMITED

Situated in North Wales and a member of the G.K.N. Group of Companies, we produce electrically melted low alloy and special carbon steels for use in the automotive and light engineering industries.

Currently, we are nearing the end of a £47 million development scheme which will make widespread use of microprocessors and minicomputers.

As a result of this development, we have the following vacancies:

SYSTEMS ANALYST/PROGRAMMER
To assist in the specification, design, development and installation of information systems initially in the order handling and production planning and control systems. This is an opportunity for a suitably qualified person to join an expanding company and grow with the system.

PROCESS CONTROL PROGRAMMER
To develop and maintain systems using CORAL and assembler. Although previous experience would be desirable it is not essential but it is considered to be advantageous for candidates to have an engineering, scientific or computer qualification.

Please call, telephone or write for an application form to:

Personnel Director
BRYMBO STEEL WORKS LIMITED
Brymbo, Wrexham, Clwyd, LL11 6BT.
Telephone Wrexham 766333

GKN - Britain's largest international engineering group

International Recruitment Services (UK) Ltd

Career Opportunities

Worldwide

(UK Base) £5,000-£7,000

One of the world's leading software companies handling projects throughout the world is rapidly expanding looking for men of the right calibre to join their team, which offers excellent advancement prospects both in the company and in the industry.

Systems Analysts (195 787)

The requirement is for self-motivated people with hard DP or line management knowledge. We are looking for top analytical and systems design ability and preferably experience of ICL hardware. Professional qualifications outside computing, especially banking, would be an advantage. The vacancies are based in the UK but involve extensive overseas field work for which the benefits and remuneration are above average.

Programmers (195 788)

Working mainly from the UK but with occasional field work overseas. We are looking for people familiar with COBOL and RPG II, PLAN or FORTRAN or ICL equipment. A minimum of two years relevant experience is essential.

Applicants aged between 25/45 who wish to make a sound career move to a highly reputed company should apply quoting the relevant IRS number.

JBA

Sales Engineer

Herts, Beds & Bucks over £10,000 package + car
A progressive and successful UK company marketing a wide range of terminals and peripheral equipment, wish to appoint a Sales Engineer to be responsible for the Northern Home Counties.
The position involves demonstrations, selling and technical support particularly with OEM's and end users. Candidates must have a proven sales record in a similar role and a deep knowledge of peripheral equipment.
Excellent base salary with car and unlimited earning potential.
Contact: Jim Baker

Microsystems Executive

Midlands c. £9,000
Our client, a large international engineering organisation, wishes to appoint an Executive to take responsibility for promoting the use of microprocessors in both the company's products and manufacturing activities.
Applicants, who should hold a degree, must have several years experience in the design of products or CAD/CAM systems incorporating micros. A software background would be advantageous. Ability to negotiate with directors and senior managers is essential.
Salary is negotiable according to experience. Attractive company benefits including relocation assistance.
Contact: Jim Baker

Support Analyst

London SW1 Neg. c. £7,500 + car
If you have a good IBM and COBOL background together with extensive experience of design and analysis, this client can offer you a superb opportunity to establish a career in sub-contractor support.
The company is primarily concerned with developing and marketing Project Control and Standards Overhaul packages - areas in which there is tremendous growth potential.
Applicants should have an outgoing personality and be able to communicate their ideas effectively - both the sales team and their clients rely on the Support team for technical and project advice.
Career opportunities into management and sales are wide open for individuals with drive and ambition.
Contact: Andy Wright

For further information on any of the above vacancies please contact the appropriate consultant. If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

JAMES BAKER ASSOCIATES, International Personnel Consultants
16 Maddox Street, London W.1. Tel: 01-491 4478

Support Consultants (CAD/CAM)

Holland £Neg. + relocation
Our client is one of the world's leading graphical systems manufacturers, concentrating mainly on CAD/CAM Systems devoted to mechanical engineering (automotive and aerospace) industries. They have a sophisticated range of products which are marketed internationally.
Applicants must have a mechanical engineering background including formal qualifications and at least 2 years up-to-date involvement with graphical software. Ideal candidates will already be working in the car or aircraft industries.
Superb permanent positions with European travel. Client offers excellent salaries, bonus package and relocation expenses.
Contact: Mike Creamer

System Support Advisers

Southern England c. £8,500 + car
The commercial men manager of a leading manufacturer requires a number of enthusiastic analyst/programmers of proven ability to manage a small but highly skilled team. The main objective of this group is to provide technical support to a growing customer base in the South West/East of England. The assignments are varied, challenging and require candidates to have 18 months commercial analysis/design experience in addition to a sound background in programming. Candidates will have an out-going personality, the ability to quickly grasp new concepts, and be capable of communicating at all levels.
Excellent salary, car and fringe benefits and a first class opportunity to embark on a career with a dynamic organisation.
Contact: Margaret Stevens

Analyst/Programmers

Croydon to £9,500 + benefits
Superb opportunity for programmers with around two years experience, preferably, but not essentially, in COBOL, to join a small team working exclusively in the insurance and assurance market.
The projects undertaken by the company cover a wide range of hardware and software, from large IBM mainframes through to mini computers. There are few positions available with such potential to widen and broaden your experience.
The company believes strongly in providing a career path for able and ambitious individuals and as you progress travel will be involved, and dealing with clients will become an integral part of the job.
Contact: Andy Wright

MICROELECTRONICS AND THE FUTURE... DO YOU WANT TO KEEP YOUR OPTIONS OPEN?

Microelectronics, particularly microprocessors, have been described as today's fastest accelerating technology. In such a climate you can't afford to make a wrong career move. At ERA we'll give you the chance to expand your abilities, to stay a generalist, and work on projects that are not merely at the forefront of technology, but are spread across a wide band of application areas.
We have invested heavily, both in manpower and in equipment, and now have one of the top UK teams for independent consultancy, project management, development and

evaluation of microprocessor technology. We operate worldwide and, as consultants appointed under the government's MAP scheme, we can offer a complete microprocessor based product design and development service.
The significance of microprocessors has still to be appreciated by industry and we foresee an increasing demand for our services in future. Current opportunities exist for suitably qualified and experienced men and women in the following areas:

Microprocessor Applications

We require staff for a variety of industrial and government contracts. In particular, two areas for which staff are sought are:
A. HIGH INTEGRITY COMPUTING
ERA is at present working on the development of a 1MHz real-time bus for avionics systems. The project involves microprocessor hardware and software development, interfacing problems and the performance of the system in a high electromagnetic interference environment, in which ERA has considerable experience.

B. POWER CONTROL

Opportunities are available to work on the development of a variety of ultra reliable power electronics systems making extensive use of digital electronics and microprocessor control.

Microprocessor Consultancy

To join a specialist team operating as MAP consultants to industry. These are multi-faceted roles giving the chance of involvement in consultancy for potential applications within industry, training, and for assisting companies with the development of microprocessor or minicomputer based products.
Within this field your particular specialisations will be developed and catered for - for example, lecturing abilities in general. However, these positions will call for administrative capabilities and the ability to interact effectively at senior level with clients.

If you have several years experience of microcomputers or microprocessors and are keen to develop your skills in any of the above areas without being restricted by your specialisation then contact the Personnel Manager, Electrical Research Association Ltd, Clarendon Road, Leatherhead, Surrey KT22 7BA. Telephone Leatherhead 73933.

SENIOR COMPUTER OPERATORS (SHIFT) BRISTOL

£4800 to £5900

Vacancies exist for Senior Computer Operators at our new Regional Headquarters at Bristol.

The installation consists of twin ICL 2980 DME computers with 7904 front and processor operating under George 3 supporting a comprehensive batch and communications workload.

Applicants should have several years' operating experience in an ICL 2980/George 3 installation and DME/VME experience will be an advantage.

A five-day, three-shift cycle averaging 39 hours per week is currently being worked but a seven-day, five-shift cycle may be introduced during 1979.

Terms and conditions are those expected of a large organisation and include generous holidays, contributory superannuation scheme, sickness benefits and new pension scheme.

Assistance is available towards relocation expenses where appropriate.

Application forms are available by telephoning Bristol 948238 or by writing to the Personnel Manager, Bodmin Road, Bridgwater Road, Bristol BS15 3BA, to whom they should be returned quoting vacancy number 492/78/DW, by not later than 16th February, 1979.

Central Electricity Generating Board
South Western Region

IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY

SENIOR LECTURESHIP IN COMPUTING

Applications are invited for an important senior post in the Department of Computing and Control. An active interest in research (as of research is considered) is essential. The successful candidate will be expected to play a significant role in the future development of the department.

Salary on Senior Lecturer Scale £7,800 to £9,500 plus London allowance and US\$ benefits.

Further details may be obtained from Professor J. H. Winstanley, Head of Department of Computing and Control, Imperial College, London SW7 2BZ, to whom applications should be sent by post, enclosing a C.V. and a list of publications, and names of three referees if available. Applications will be considered on 23 February 1979.

PROGRAMMER/TRAINEE PROGRAMMER

MEDICAL SCHOOL

UNIVERSITY OF SOUTHAMPTON

A Computer Programmer is required by the Medical School in Southampton General Hospital where there is a CIL Modulator One computer which also acts as a remote job entry terminal to the University of Southampton's ICL 2980 computer.

The successful applicant will have responsibility for giving advice to users in the application of standard programs, writing of computer programs, organization of data preparation and operating the CIL Modulator.

At least three years' relevant experience in the computer field is desired, and some knowledge of scientific applications. Proven ability in the application of programs and results to work with a limited computer background would be a strong recommendation. The principal language used is Fortran.

The salary will be on the University's programme scale: £3,804-£5,604 per annum (under contract). If the successful applicant has limited experience then the equivalent will be on the lowest programme scale: £2,554-£3,810. Good working conditions with generous holidays.

Applicants, giving date of birth and details of qualifications and experience together with the names and addresses of two referees, should be sent to Mrs. P. Vignoles-Salis, Administrative Assistant, The Laboratory, Southampton SO9 5NB, as soon as possible. Please quote ref. 1003/ACW.

COMPUTER PERSONNEL APPOINTMENTS

PROGRAMMER/ANALYST

TRUCK SHOOTING

ASSIGNMENTS Office £5,500

+ Car

A good amount of experience in CIL and COS/VS systems. A strong team player with a proven track record in the field and a proven ability to work in a team.

Salary on scale £5,500-£7,000 per annum. Good working conditions with generous holidays.

Applicants, giving date of birth and details of qualifications and experience together with the names and addresses of two referees, should be sent to Mrs. P. Vignoles-Salis, Administrative Assistant, The Laboratory, Southampton SO9 5NB, as soon as possible. Please quote ref. 1003/ACW.

THE PERSONNEL GROUP

NEW STREET

021-643-0951

CAPITAL APPTS

FORTRAN

Programmers urgently required for a variety of projects in the field of scientific development.

Salary £6,000-£7,000 per annum.

For further details contact the Personnel Manager, Capital Appointments, 1003/ACW.

075557 day, £34 9859 eve.

PROGRAMMER

Salary £4,200-£6,200 p.a.

The Central Electricity Generating Board invites applications for the post of Computer Programmer. The person appointed will initially join a team completing the development of the monitoring and control system for Heysham Nuclear Power Station.

This system uses Ferranti Argus 500 processors and is programmed in ASTRAL. Much of the work will be at the power station but some visits to other locations will be necessary.

The team is responsible for enhancements to the station system and will be integrated into the Station Liaison team serving power stations throughout the region. This team is based at Bramhall near Stockport, where the Regional Installation is an ICL 1904S, to be replaced in 1980 by a 2950, with terminals at power stations. In addition several power stations have process control computer systems.

Applicants should preferably have a degree or equivalent in a technical subject and have some experience in on-line programming. Familiarity with ASTRAL will be advantageous.

Applications in writing, from either sex, giving details of age, experience, etc., to the Personnel Manager, Europa House, 4rd Floor, 100, Cannon Street, London EC4A 3DF. Tel: 01-583 3111. No later than 21 February 1979. Please quote vacancy no. 432/CW.

NORTH WEST**RNIB**

The Royal National Institute for the Blind uses a sophisticated text processing system based on two large GEC 4070 minicomputers for the translation and preparation of Braille literature. The Braille production department is located at Braille House, 338/348 Goswell Road, London, EC1 (near the Angel underground station). We require a

Computer Operator

to run the computer system on a day-to-day basis and to assist in making the best use of its facilities.

Programmer

to assist in the further development of the text processing software. An interest in word-processing and on-line systems is essential and relevant experience a distinct advantage.

Salaries, including London weighting:

COMPUTER OPERATOR C1500 p.a.
PROGRAMMER £4000 p.a.

Plus free lunch in staff restaurant

For further information telephone Gareth Bennett, 01-837 9921 Ext. 20, or write to him at the above address.

COMPILER AND BASIC SOFTWARE DESIGNERS PROGRAMMER/ANALYSTS

are required urgently and progressively throughout the year for the gradual expansion of this specialist software house which develops, markets, and maintains basic computer software that ensures profitability of application programs over a wide range of machines —

CORAL 86, FORTRAN, RTL-2, BASIC, MASCOT — — —

PDP-11, NOVA, LSI-2, NM4, INTERDATA — — —

Knowledge of BCPL and CORAL would be an advantage.

Initial salaries can be above those normally advertised, salaries are reviewed twice yearly, bonuses, non-contributory approved pension scheme (pension transferable), health and disability insurance are available.

Please reply in confidence sending a c.v. and stating when you could be available to:

Peter Buus de Bono, Managing Director

HPAC

HPAC Limited
Cherwell House
London Place
St Clements
OXFORD
OX4 1YT

KUWAIT — URGENTLY REQUIRED System Manager also Systems Analyst

Experience of ICL 1900 Machines and George 3 with Cobol and Fortran Languages.
Contact: Lesley Andrews, Tel: 0993 38111.
LYNX INTERNATIONAL LIMITED
128 High Street, Oxford, Surrey (gov)

PROGRAMMERS YOU NEED TO BE QUITE A CHARACTER TO WORK FOR US



Outwardly, our software engineers/programmers are very much like anyone else's. But beneath their apparently 'standard' exteriors lie talents of a distinctly extraordinary type.

When it comes to engineering software for airborne applications, their super-speed and accuracy ensure that the shortest response times are easily met. They're invulnerable to pressure and the high integrity demands of the software they design.

How do we find such people? Well, it's not as difficult as you might think — there are many programmers who are potentially as special. The problem is that not every company can't get the best out of them. But here at Marconi, we make sure that everything is geared to one thing — job satisfaction. The challenges we offer, the working environment and the career prospects all combine to ensure that our men and women can really make the most of a career with one of Europe's top electronics companies.

If you have real-time experience in non-commercial applications, this is your opportunity to prove that you are the sort of person we're talking about. So don't make your identity a secret — contact us now for more information.

Either phone Norma Coulter on 01-2030, ext. 3771 or alternatively write to H E Bairdler, Marconi Avionics Limited, Elstree Way, Borehamwood, Herts. Please quote reference MA 79013.

MARCONI AVIONICS
A UNIT — Marconi Electronics Group

MUNICH**Accounting/Software Translator**

to translate German documentation to English as part of a team.

Accountancy/book-keeping background an asset. One-year contract £400 p.w.

Software Designer

to design the concept for linking programmes together within a translator package for new Siemens Hardware.

TP software experience along with order processing experience along with order processing is essential, as is previous experience of working for a major manufacturer or software house. 4-month contract. £540 p.w.

Phone or send résumé to us at the address below.

FOCUS
Computer Services Limited
100, High Street, London E14 6JF

Contract Spot

**ICL 1900
COBOL
PROGS.
AND ANALYSTS**

For City/S.W. London

Phone Paul on 01-2030, ext. 4424.
Meteor Computer Consultants Ltd.

XORE
Computer & Software

REAL-TIME MINI SOFTWARE SPECIALISTS £5,000-£9,000

Xore Computing Ltd. is an independent UK-based software house specialising in systems design and programming of real-time mini and micro computer systems. The Company has experience in carrying out projects in the following areas:

BASIC SOFTWARE Operating Systems, Compiler Development Packages, Text Editors, etc.
COMMUNICATIONS Telemetry Systems, Message Switching, Data Collection, Concentration, etc.
PROCESS CONTROL Pipeline Control, Alarm Monitoring, Simulation, etc.

The Company possesses its own PDP 11/33 computer and in-house facilities for software development. Applicants should have a sound knowledge of real-time systems and experience of at least one mini-computer or micro-computer. Write to or telephone Mr J. Jarvis.

20 Woburn Road,
London W11 0AT
Telephone: 01-203 5932

STAFFORDSHIRE POLICE Ferranti Argos 700 experience?

SYSTEMS ANALYST

£8722-£7230 p.a.

We need an experienced Analyst to head a small computer operating team and to be responsible for the continuous operation of the Police Command and Control Computer System based at Stafford. The work will also involve the development of the system in conjunction with Police Scientific Development Branch personnel. Experience in real time applications using Ferranti Argos 700 computers essential, and a good knowledge of Coral 86 will be an advantage. Relocation expenses are available.

PROGRAMMER

£4248-£5563 p.a.

You must have experience with real time continuous transaction systems, preferably on Ferranti Argos 700 computers, and a good knowledge of Coral 86 will be an advantage.

Application and job description forms, returnable by 28th February 1979, are available from the Staffing Department, Chief Constable's Office, Cannock Road, Stafford ST17 9QS (Stafford 07717 ext. 218).

DYNAGRAPHICS FIELD SERVICE ENGINEERS

Due to expansion IMLAC International Limited is Computer Graphic Display Systems, and experienced Field Service Engineers, to support POS-4 and POS-1 Systems and the new range of Graphics Terminals.

The Engineers will operate from IMLAC's offices and be expected to support sites throughout the UK.

Applicants should have at least 2 years experience working on mini computers and IMLAC are offering competitive salaries and an attractive Pension Scheme.

For further information, please call or write to:

John Smith, IMLAC International Limited, IMLAC House, 17, Cannon Street, London EC4A 3DF. Tel: 01-583 3111.

MYRIAD

PROGRAMMER/ANALYSTS

ENJOY THE CHALLENGE OF REAL-TIME ENGINEERING SYSTEMS

SURREY/HANTS BORDER**PDP-11 — ASSEMBLER****£5000-£7000**

We are seeking to recruit six PROGRAMMER/ANALYSTS to develop a major international avionic system. Applicants should have two years' assembler experience, gained on PDP-11 equipment, coupled with a relevant degree OR greater programming experience with lower academic qualifications. A scientific background will prove most useful for this and future projects.

The successful candidates will work in conjunction with a hardware design team to prepare detailed software specifications that will co-ordinate advanced electronic equipment when installed in supersonic aircraft. After the programs have been written, the system will be meticulously tested to the customer's satisfaction and the Programmer/Analysts will be responsible for fully documenting the software prior to acceptance testing. These positions require persons who enjoy solving interesting problems in a real-time environment and

future projects will cover a wide variety of hardware and be equally demanding.

The company specialises in engineering/electronic projects, often producing both the hardware and software for bespoke systems. Their services range from operations research and management consultancy through project appraisal to final implementation. Customers are typically in transportation, agriculture, industry, defence and communications; therefore job-interest does not prove a problem for the employees. Located in the attractive countryside of Surrey, the modern offices are well serviced by three British Rail stations and there is a large staff car park next to the building. Road and rail routes are very accessible and provide quick transport to the West End of London.

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We are seeking an individual who has worked with Data Base applications, who has management skills, and personal stability. It is essential that candidates have experience with Honeywell 6000, IDS and GCOS, along with a good knowledge of COBOL.

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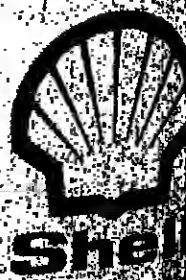
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SENIOR SOFTWARE ANALYST (DATA BASE)

The person appointed to this position will have to be an expert in the analysis of three or four years' working experience with the internals of Data Base management software. Literally with DMS 170 experience. Applications experience is also needed. The proven ability to accept responsibility is key. The work will include installation and maintenance, identifying and correcting software problems, specifying modifications and enhancements to the system and communicating same to the Systems Design Group. Integration and evaluation of pre-release test software will be another important role, as will be customer liaison.

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Senior Control Data personnel will visit London later this month to conduct interviews. If you are interested in applying, please telephone Chad Stolper of Prescott Computers at (01) 242 2142 or, if you prefer, write to him at the address below. Prescott specialise in the recruitment of computer personnel for South Africa and are able to provide candidates with knowledgeable information on working conditions and life in South Africa.

Prescott Computers Ltd
8 Bloomsbury Square
London WC1A 2LP

SENIOR SOFTWARE ANALYST

They require a Senior Software Analyst with at least two or three years' experience with full responsibility for the operating systems software of a large manufacturing (NOS and/or NOS/BE). Telecommunications experience (datacom and/or IAF, TAF) is essential. The person appointed will have to assume total responsibility for Software at a large multi-national site with a large terminal load. Duties will include installation and maintenance of software, integrating and testing of new releases and pre-release software. An important further role will be advising management on software related strategy.

Salary £9,000-£11,500

ANALYST— URBAN PLANNING SYSTEMS

They require a Senior Software Analyst with at least two or three years' experience with full responsibility for the operating systems software of a large manufacturing (NOS and/or NOS/BE). Telecommunications experience (datacom and/or IAF, TAF) is essential. The person appointed will have to assume total responsibility for Software at a large multi-national site with a large terminal load. Duties will include installation and maintenance of software, integrating and testing of new releases and pre-release software. An important further role will be advising management on software related strategy.

The person appointed will have to exhibit all the pioneering qualities needed to build this important part of their Data services operation.

Salary £9,000-£10,500

COMMUNICATIONS SPECIALIST (HARDWARE/SOFTWARE)

Negotiable

They require an individual who is well versed in data transmission and communications software. You will have a good electronics background with extensive experience in Post Office lines, modems and multiplexors. In addition you will have had considerable software experience at the assembler level and will have designed interfaces, tips and handled communication projects from definition to resolution. You will have also had exposure to planning of communication networks as well as liaison with Post Office officials to ensure installation is effected according to specification.

They offer a challenging position in their national and international support group. The work will involve consulting and hands on exposure to the host to terminal interface, as well as mini to mini and mini to host communication development. The salary is certain to exceed your expectations.



PROGRAMMERS Advanced Techniques

LONDON, W1

Up to £6200

Are you now at the stage where you need to learn more sophisticated techniques? Our clients, based near Oxford Circus, have a lot of development work on hand. This has led to several openings, as below, offering:

- the opportunity of learning modern techniques, such as Database, Communications and Transaction Processing, using major ICL 2980/1900 equipment.
- varied projects, of an interesting and often technically challenging nature, in a well-organised environment.
- retraining where appropriate.
- an excellent starting salary, with good progression and a cost-of-living increase in April.

SOFTWARE PROGRAMMERS

Up to £6200

To join a small team supporting ICL 2980 VME/B, MAC, IDMS, TP and Utilities, or to support ICL 1900 software (George II +) and Communications, transferring to 2980 software later. The former posts will interest programmers who have worked in a software support role on ANY HARDWARE using ANY LANGUAGE, while the latter requires PLAN and COBOL, plus knowledge of 1900 software. Ideally George II +.

APPLICATIONS PROGRAMMERS

Up to £5600

We are looking for sound programmers with probably around two years' or more practical experience. This could be using ANY LANGUAGE on ANY HARDWARE. The language used is COBOL, and you will be retrained in this if necessary.

TRAINEE PROGRAMMERS

£3300/£3600

A degree (ideally in computing) or good "A" levels are required, and you will be asked to take an aptitude test. Training in COBOL will be provided.

We are recruiting on behalf of clients. Please ring us for a confidential talk, quoting the appropriate reference, or leave a message at our answering machine after hours and we'll contact you.

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PROJECTS CONTROLLER

c.£8,500+ Car S.Yorks

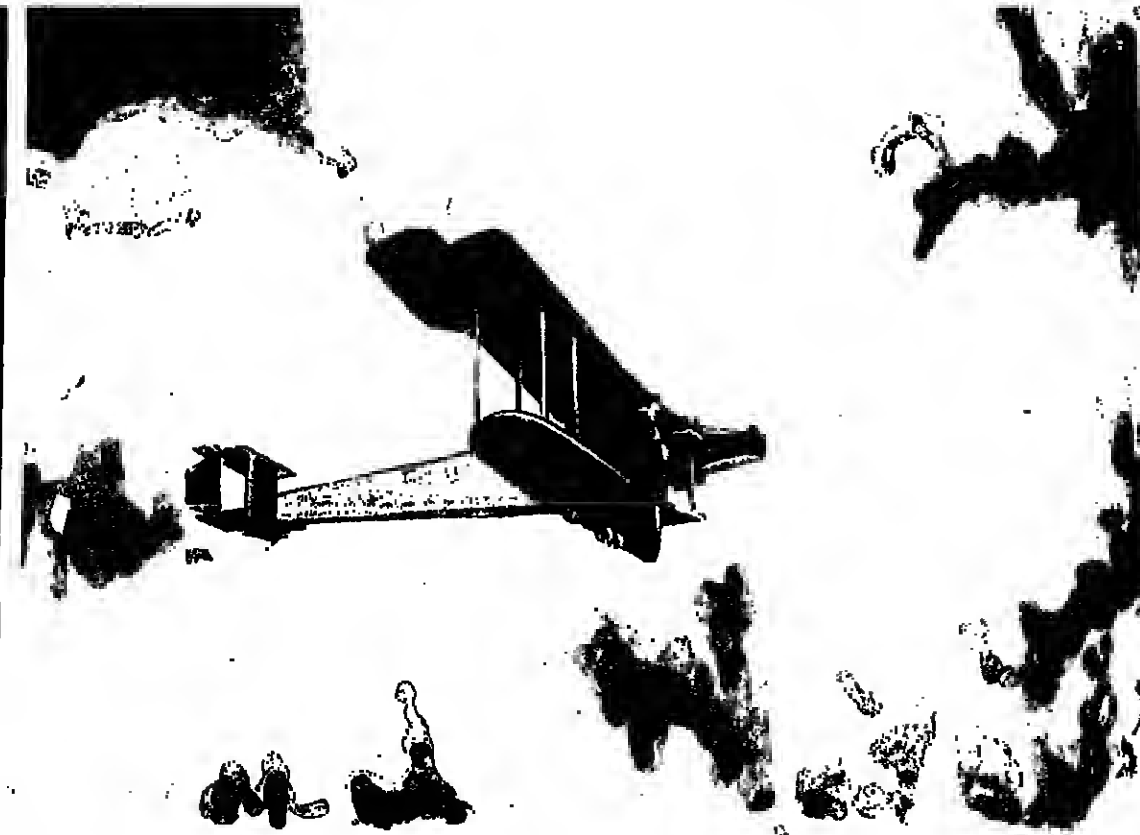
OUR CLIENT WISHES TO RECRUIT AN EXPERIENCED MANAGER TO PLAN AND CONTROL THE SUCCESSFUL COMPLETION OF VARIED AND INTERESTING USER DEPARTMENT PROJECTS.

THE SUCCESSFUL APPLICANT WILL HAVE ALREADY DEMONSTRATED THE ABILITY TO COMPLETE PROJECTS WITHIN PLANNED TIMESCALES AND WILL BE HIGHLY EXPERIENCED IN ACHIEVING SUCCESS THROUGH COMPETENT DEVELOPMENT STAFF.

THE APPOINTMENT IS AN INTEGRAL PART OF THE NEW MANAGEMENT STRUCTURE AND THE SALARY AND CONDITIONS OF SERVICE WILL REFLECT THIS.

Fraser Williams
computer consultants

CONTACT:- K. G. GRIMSLEY
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Take Travellers Cheques - once we dealt only in Sterling, now we deal with cheques in 5 major currencies. As part of this major project, Data Base, on-line and distributed processing are all being considered...

Or Holiday Reservations - habits and trends are continually changing. In the light of our future plans, our current Real Time Systems are under review...

Or Foreign Exchange - the floating £ and the uncertain \$. We are computerising this side of our business too, with the installation of Minicomputers both in the U.K. and Overseas...

Commitment.

At Thomas Cook, travel is computer-based. As we plan for the future, our commitment to computers is strengthened in all aspects of our worldwide operation, whether in travel or its associated banking services.

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This means opportunities for the men and women joining us at our Peterborough Head Office to involve themselves in an expanding business, with the scope that comes from already being the world's largest travel organisation. We deal with 145 countries, and have more than 900 branches and representative offices worldwide. This international aspect of our organisation offers involve-

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Analyst/Programmers

Starting salaries up to £6750.

Positions at all levels for versatile people with strong technical potential and good inter-personal skills. Training will be given where necessary to meet our requirements for IBM main frame technology using AS/400, PL/I or COBOL, and for our distributed processing projects based on IBM series 1 and Texas Instruments equipment.

If you think you can offer the relevant experience we would like to tell you more about us and the opportunities we can offer.

Our benefits package includes, as level of appointment, pension for our time, a bonus scheme where appropriate, up to 10% of salary, holiday entitlement, guaranteed housing from the Peterborough Housing Corporation. Come and meet some of the people who are working with them on the project.

Informal interviews

Birmingham

Holiday Inn - Tuesday, 10th February, any time between 11.30am and 8pm.

London

Thomas Cook - Berkeley Street - Tuesday, 14th February, any time between 11.30am and 8pm.

If you can't make it but want more information, contact Terry Selt, Personnel Manager, Finance Section, The Thomas Cook Group, P.O. Box 6, Thorpe Wood, Peterborough, PE6 6B. Tel: 0433 61500.

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Johnson Matthey and Co. Limited, leading refiners and fabricators of precious metals, are seeking two Computer Operators. Previous experience is preferred but school leavers of 'O' level standard will be considered.

Applicants with previous experience should preferably have a knowledge of George 2+ and R.J.E. Operators work on two-shift system (7am-3pm/3pm-11pm).

Commencing salary will depend on age and experience plus a shift payment.

Company benefits include free lunches, four weeks' holiday and contributory pension scheme.

To apply please write or telephone Mrs. C.J. Kellegher, Staff Officer.

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USA PROGRAMMER ANALYST/ PROGRAMMER

★ \$18,000 to \$30,000 depending on experience
★ Excellent company paid benefits

★ In house training programme
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SDA, a highly respected computer consulting company, is rapidly expanding in New York City, Chicago, Hartford, Connecticut. We require individuals with a minimum of 3 years IBM 370 experience (or equivalent), preferably with a degree, to join our current staff of 250. For challenging assignments in systems design, applications programming and database management, with the possibility of participating in our international expansion on your return.

To arrange a confidential interview (expenses paid), please contact Manchester, send your C.V. with telephone number and address (travel charges) Roger Barnes on 0625 881781 (10am-5pm, 13/14/15 between 10am and 8pm).

SOFTWARE DESIGN ASSOCIATES
BOX 11007
Computer Village
Dorset House, Stamford Street, London

Computer Operations Professionals

Who'll back your expertise to the tune of £7,000,000?

That's the amount Morgan Guaranty, an international corporate bank, have started to spend on future systems and our people at the UK Data Centre in London. With your relevant expertise and our dual 370/148/138, currently utilising DOS/VS, we believe there is no better time for us to get together.

If you have commitment and a genuine desire to succeed, we can offer you a well-structured career and development programme in our operations group. For example, we're looking for:

Shift Managers-up to £8,300*

Operations Analysts-up to £6,200

Schedulers-up to £6,200

Data Control Shift Leaders-up to £6,000*

Senior Data Control Clerks-up to £5,500*

Operators-up to £5,000*

Librarians-up to £4,600

Data Control Clerks-up to £4,500*

*Includes shift allowance

Additionally we'll offer you our 3% mortgage facility and other excellent company benefits which include an annual bonus of up to 15% of salary, non-contributory pension, medical and life assurance plans, subsidised meals and travel, and an attractive relocation package.

There is only one certain way to discover just how good our offer is and that's by ringing straight into our Data Centre on **01-534 8111** or **01-534 7338** (reversing the charges) and asking for **Ann Delaney**.

There will be people on hand, who talk your language should you have specific technical queries.

If you can't get to a 'phone, write to Ann Delaney at Morgan Guaranty Trust Company of New York, P.O. Box 161, 33 Lombard Street, London EC3P 3BH.

We'll reply by return of post.

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S.W. LONDON

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To £4500 + Shift

A major international service organisation has recently upgraded its computer hardware to dual ICL 2960's. As a result they are now able to offer several first-class opportunities for career advancement.

Within the PRODUCTION department there are currently a number of opportunities at all levels up to Control Supervisor. As a result of a major revision and expansion of this team the Production role encompasses primary user liaison, all off-line control, and the retrieval of run error situations. The successful candidate should be able to offer at least one year's previous experience in a control team, although in the case of the Control Supervisor we are seeking three years' minimum, and the enthusiasm to succeed in a high-throughput and demanding environment.

A SENIOR OPERATOR with two years' 1900 experience will find this an ideal move into a sophisticated 2900 installation. As a key member of a small team the person appointed will be responsible for ensuring efficient machine utilisation, and will become capable of first-level fault tracing. He/she will also be responsible for training and supervising junior operators.

A two shift system is in operation for which a 12½% premium is paid. In the only commercial dual 2960 installation in S.W. London these are rare opportunities to pursue a rewarding career.

Ref. SW1/0802

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Redifon Computers, the second largest British-owned Computer manufacturer, is starting a major new expansion programme. This will complement an existing programme that has led to eightfold growth in the last five years.

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- 2 years' successful experience selling computers?
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- Currently earning £9,000-£10,000 p.a.?
- Clean driving licence?
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Tick the questions. If you score 4 out of 5 you could be selling the R-Range of data entry

and distributed data processing computer systems within months.

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SURREY Programmer £6-87.00
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SURREY Analyst/Prog. £6-87.00
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608 WILLIAMS has close contacts in the South. Telephone Today for an early interview.

Management Personnel
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GUILDFORD (0483) 68686

UNIVERSITY COLLEGE OF CORK STATUTORY LECTURESHIP IN COMPUTER SCIENCE

The Governing Body invites applications above vacant office.
The salary range (from 1 March 1979) £7,221-£9,530 p.a.
Application forms and further details may be obtained from the undersigned.
Latest date for receipt of applications: WEDNESDAY, 28 FEBRUARY 1979.
M. F. MURPHY

Trainee Computer Operators

As a Trainee Computer Operator with the Prudential Assurance Company you will not only establish yourself in a profession that is highly in demand, but with a Company that is rapidly growing in a growth area.
If you have 'A' level Maths already and can pass a special aptitude test, you will receive a comprehensive training, after which opportunities will be opened to you to progress within Computer Operations and to other areas of our Management Services Division.
On completion of the training period, your earnings will be in excess of £4,000 p.a. This includes an allowance of 20% of basic salary for working a 3-shift system.
For further information, telephone 01-405 9222 ext 2474 or write to: Sue Brandon, Staff Department, Prudential Assurance Co. Ltd., 142 Holborn Bars, London EC1N 2NH.

Prudential

Principal Programmer IBM INSTALLATION

South-East London to £7148

You will be responsible for ensuring standards are maintained for all programming in a project team and be thoroughly conversant with COBOL and ASSEMBLER languages.

New projects scheduled include on-line Financial and Property Information Systems, so a sound knowledge of CICS/DOS/VS would therefore be advantageous. Interactive programming facilities are installed using Ours.

Come and join a progressive organisation, based in modern premises at Catford, consisting of some 60 development and operation staff, utilising IBM 370/138 supported by distributed Olivetti, Plessey and Redifon processors.

We offer good career prospects, a competitive starting salary, optional flexitime, in excess of five weeks' leave and a thoroughly professional O.P. environment. Good public transport facilities and free car parking available.

For further details ring our Systems Manager, Mrs. L. Harris, on 090 4343, ext. 66, or send full personal and career details to her at Lewisham Town Hall, Catford, London SE8 4RU.

LONDON BOROUGH OF LEWISHAM

Anglian Water Authority

The Authority has installed a dual Honeywell 66/10 384K as new purpose-built computer Centre at Huntingdon, with twenty two line network and eight terminal nodes installed on the central I/O unit.
A major programme of computer development, including Data Base and Telecommunications, is underway, and two experienced Operators are required for the Operations Section.

COMPUTER OPERATORS

Ref. 11051
Salary: £3,648-£4,038 including £312 p.a. supplement plus 14% for 2-shift working = £4,213-£4,603

Applicants should possess at least eighteen months' experience on either Honeywell Level 66 equipment or a similar type of computer. Knowledge of Honeywell operating systems is desirable.

The post is located at Brook House, Huntingdon. General relocation expenses are payable at appropriate rates.
Application forms, returnable by Friday, 23rd February 1979, are obtainable from Miss Jenny Spencer.

ANGLIAN WATER AUTHORITY
Diploma House, Grammar School Walk, Huntingdon, Cambs. (0480) 55181, Ext. 370

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611

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The sales person our client is looking for will not only have the opportunity to earn the salary stated above with ease as it consists of a high basic, plus an extremely good commission scheme, but will also be directly in line for a lucrative management position.

Ideally, you will have a background in selling minis and/or bureau services and have that special something that sets YOU apart from the crowd.

Ring Tony McGrath for an immediate interview.

Suite 201/6, Albany House, 324 Regent Street, London W1R 5AA. 01-637 9611

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THE NEXT BIG QUESTION

b180? Do you want the challenge of real time in switching or control systems?

? Do you have MACRO, CORAL, FORTRAN, or ASSEMBLER knowledge?

YES? We need Systems Designers, Software Engineers, and Programmers for development work on Minis and Micros

WHERE? Particularly in Berkshire/Bucks; Hampshire/Surrey; and Bournemouth area.

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WHAT WOULD I EARN? Depending on experience, up to £7½K to start, plus usual big company benefits.

INVESTIGATE YOUR FUTURE phone Derek Pearson now!

Systems Programmer

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UNIVAC 1106

London up to £6739

Our Scientific User Support Section based in Holborn is looking for a third member to join a team involved in all aspects of the 1106 usage, providing a bureau type service within British Gas.

- * Batch and Interactive Processing
- * Fortran and Cobol
- * OS1100
- So if you have
- * A good working knowledge of OS1100
- * Several years programming experience
- * An ability to communicate clearly both verbally and in writing

Contact us today.

The salary, inclusive of Inner London Weighting, ranges from £5335 to £6739 per annum plus current self-financing productivity payment.
Please ring W Bradley on 01-723 7030 extension 2475 for further information, or write with full details of age, experience, qualifications and current salary, quoting reference PS/617101 (705), to the Senior Personnel Officer (Hinckley), British Gas, 59 Brynston Street, London W1A 2AZ.
Closing date for applications 22 February 1979.

BRITISH GAS

Programming Opportunities in a major bank

Co-operative Bank is significantly expanding its computing activities in London and plans to set up a self-contained Development Group which will be responsible for the development, implementation and support for all London-based systems.

Both I.B.M. and Burroughs equipment will be in use and although members of the team will initially concentrate on the separate activities associated with each manufacturer's equipment, opportunities will exist for 'cross fertilisation' of knowledge. It is also expected that the team will grow progressively both in size and terms of reference, affording ample opportunity for promotion of founder members. We are looking for:

I.B.M. Assembler Programmers
minimum 1 year's experience in a commercial field. The equipment they will be concerned with consists of twin 370/138's half megabyte, 3340 disks, 3800 sorter-readers, 3278 V.O.I.'s and the usual other peripherals.

They will have the opportunity to become skilled in the programming of high-speed sorter-readers and will go on to teleprocessing applications, becoming familiar with a

wide variety of systems software and progressing at least to the rank of Systems Programmer.

Burroughs Systems Programmers
acquired with 61700/81860 machines. A small Burroughs real time teleprocessing system will be used to provide specialised services. The applicants will work in collaboration with consultants to implement and then take over responsibility for maintenance and development when satisfied that the design criteria have been met.

Commencing salaries are in the range of £5,000-£5,500 and fringe benefits are commensurate with a Clearing Bank including preferential interest rates for house purchase and assistance with relocation expenses in appropriate cases. Please write with full details to R. J. Gorvin, Personnel Manager, Co-operative Bank Limited, P.O. Box 101, New Century House, Manchester M60 4EP.

GO The Co-operative Bank

SDM

URGENT REQUIREMENT

Contracts in the North West

IBM 370/158
Univac 1100
ICL 2904

Cobol IMS
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Programmers
Programmers

Contact: Lynda immediately:
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Freepost, Wirral
Marseyside L63 3AB. Telephone: 061-808 9365. Evening 0842-79288

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ALL PROGRAMMERS AND OPERATORS
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MULTI-ACCESS

On-Line programming of a centralised system on 8 min.

Two freelance programmers needed to start work urgently on a high level language, Raptor W1.

Ring: Peter (0251) 6709.

University of Bradford Computing Laboratory COMPUTER OFFICER
Ref. 11/03/79/CM

Applicants are invited from production or professionally qualified persons with programming experience for the post of Computer Officer in the University's Computing Laboratory which operates a large ICL 1904S installation, equipped with the George 5 On-line System and providing a central service for research and teaching within the University. The successful applicant will work in the Applications Group and will have general responsibility for system software.

Salary scale £2,092 to £5,564 p.a.

Applicants should send their application to the Personnel Officer, University of Bradford, Bradford BD7 1DP.

HARTLEPOOL COLLEGE OF FURTHER EDUCATION
Principal C. C. Dorman, 8 St. Mary's M.C. Quay Ed.
APPOINTMENT OF LECTURER GRADE 1
DEPARTMENT OF BUSINESS STUDIES (COMPUTER STUDIES)
(Ref. 11/03/79/CM)

Applications are invited for the above post with duties to commence as soon as possible. Previous applicants need not re-apply as their application will automatically be considered.
This position requires a full-time post holder to be responsible for teaching Computer Studies to students throughout the College. Computer and/or industrial experience and expertise with microcomputers are desirable.
Further information and application forms may be obtained from the Principal, College of Further Education, Spectator Place, Hartlepool, Cleveland, or when completed forms should be returned by 15th day of the appointment of this advertisement.

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Our clients are a multi million ££ BRITISH company — MARKET LEADERS in their field — enjoying outstanding business growth. The investment they are prepared to make in your future include: a base salary of at least £5K, substantial income guarantees, company car, and an income potential of c. £15K after training. You should be aged between 22 and 35, articulate, numerate, and "open minded" enough to talk to our career adviser for an immediate assessment and, if successful, an introduction to our clients. Telephone immediately for a discussion — Ref. DS-4.



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You must be good at:

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To £9,500 p.a. + Bonus + Car

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- ★ Have you managed large / medium Computer Projects?
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REF. No. JFEG-3



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Our client, a major international computer manufacturer, with a large share of the IRISH computer market, wishes to recruit successful Sales Personnel NOW

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— A knowledge of computer systems like the 2903, System 10/20, IBM System 3 or 370, Honeywell Level 62/64, or other similar computers.

WE WANT TO HEAR FROM YOU

If successful — you will join a professional and progressive Sales team with a Company which prided itself on its record and the high calibre of its Technical Support Groups.

THE REWARDS: — A Generous Basic Salary and 1st class Commission Plan.
— 1st year commission guaranteed at a mutually agreed level.
— Comprehensive Product and development training and genuine opportunities for career progression.

With a buoyant Economy and growth computer market, NOW is the time to build your selling career in IRELAND.

RELOCATION ASSISTANCE will be available where appropriate.

Telephone/Write NOW to Pat Rafter or Pauline Healy. Quote Reference CW18

All applications will be strictly confidential



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SYSTEMS ANALYST****SOUTH MANCHESTER****£ neg.**

Umbro International is offering a responsible and demanding position to a Programmer with some analysis experience.

Reporting to the Computer Manager of this forward-thinking department, you will be responsible for the design, maintenance and upgrading of commercial systems on the ICL 1901T.

Good working conditions, subsidised restaurant and staff discounts on sports goods are among the rewards offered.



Send a brief c.v. to:
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INTERNATIONAL,
UMBRO HOUSE,
WILMSLOW, SK9 5AT.**

**SOUTH
HAMMERSMITH
HEALTH DISTRICT (T)**



**SENIOR
SYSTEMS
DESIGNER**

to share in support of on-line laboratory systems and to lead development in one of them

Salary: £5,581-£7,088 (inc. London Weighting).

For further information please telephone Chief Systems Designer on 01-745 2040 Ext. 2021 or contact the District Personnel Department, Charing Cross Hospital, Fulham Palace Road, London W5 9HH. Tel: 01-745 2040 Ext. 2887.

**Operations
Staff....**

**This could be your key
to a better future**

In fact a whole new world could be around the corner if you join us in this, one of the world's most advanced purpose-built computer centres. Over the last 12 months many exciting developments have taken place. For instance, we installed seven computers, three operating systems, 100 disc drives and linked in over 200 users. We think that's quite an achievement. This year will be just as exciting with many more new developments. And to help us fulfill our commitments we are currently seeking additional:

Senior Computer Operators Master Terminal Operators

Ideally, we would like you to have experience in at least two of the following areas: VM, DOS/VS, VSI, ILLIAC, MVS, TSO, IMS or CICS. But equally, you should have a genuine interest in computing as a career.

Technical Operations Analysts

...are also required to join our newly established change management and problem tracking function. No shift working is involved. Competitive salaries are offered and benefits are those associated with a major company and include 5 weeks' holiday, pension, life assurance and sick pay schemes, substantial discount on BL cars and accessories. Generous relocation assistance will also be provided to this pleasant rural area where housing is favourably priced. So, if you're looking to develop your career in an exciting environment using the finest equipment and the idea of internal and external training appeals to you, ring our Operations Manager, Rod Watts on (0527) 28515 or if you prefer write to him at:
BL Cars Limited, Data Centre, P.O. Box 8, Redditch, Wores.

Cars Staffs & Services

**Computing in a College Environment**

The College plans a large increase in its computing work and has therefore created two additional posts:

1. COMPUTER MANAGER

Salary range: £4101-£9556 (subject to review)

The person appointed will act as Senior Programmer/Systems Analyst in leading a group of programmers responsible for:

- the routine operation and further development of a terminal oriented IVOL and job-type computer service used by academic staff in the teaching of computing throughout the College
 - the design and implementation of a computer-based system for college administration and statistics
- Programming competence, some experience in systems work, and an enthusiasm to mastermind the provision of a comprehensive College computing service are essential requirements for this post.

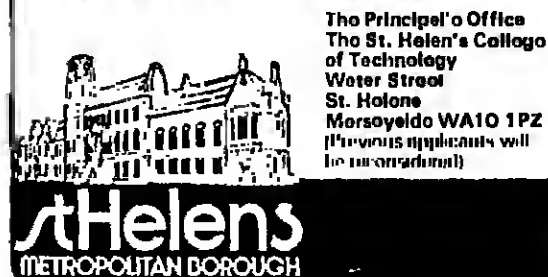
2. PROGRAMMER

Salary range: £3420-£4320 p.a. (plus £312 00pp.)

The second post is for a programmer with sound experience in a high-level language, such as COBOL, and who will be responsible for programming a major part of the work described above.

The major areas of computing involve on-line and batch processing on an ICL 1902T machine with 32K of core store and an E 6 S. 6N allocated for College use. Additionally, the College makes limited use of the on-line facilities provided by the Open University Service and the Honeywell Mark III Series and is also involved in a number of microprocessor developments which may become increasingly important.

Application forms, which should be returned by 22nd February, 1979, are available from:

**University of
Birmingham****COMPUTER CENTRE
ADVISER FOR
INTERACTIVE COMPUTING**

The centre's provision of a wide range of local and remote computing facilities is now being extended by the installation of a new interactive system. Successful candidates will be expected to have a sound knowledge of interactive systems for both teaching and research. A new post of Computer Officer has been created in the User Services Group to develop the practical application of

**CAI and CAL
Techniques**

The post is tenable for two years, secondment would be welcome. Applications are invited from graduates with computing experience, especially in the areas of simulation and modelling techniques. A higher degree is desirable, but clear evidence of previous work successfully completed is equally important. Starting salary, according to age, qualifications and experience, will be on the scale:
£3,384-£5,604 (bar-£6,556 under review)

Further information from the Assistant Registrar, Science and Engineering, University of Birmingham, P.O. Box 363, Birmingham B15 2TT to whom applications (three copies), including full curriculum vitae and naming three referees, should be sent by Friday, 2nd March, 1979. Please quote ref. CZ1.

**Systems vacancies
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- New developments.

This engineering subsidiary of a major UK Group - a leader in its field - requires two systems people to play major roles in the redevelopment of the company's production control and accounting systems.

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This position reports to the Systems Development Manager. Candidates should have extensive experience of all aspects of systems development in a commercial environment - particularly in the areas of production control and management accounting.

Systems Analyst

Candidates need at least 18 months' experience of commercial systems development.

The excellent salary is accompanied by an attractive range of other benefits and, for the senior position, a company car will be provided. Removal expenses will be paid where appropriate.

To apply, please write or ring, asking for Neville John on 01-242 9356 (day) or Farnborough (Kent) 52880 (evenings and weekends).

OCC Computer Personnel Limited,
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Telephone: 01-242 9356

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Salary £8250 + OT

You should have in depth knowledge of IBM OS/VS1, JCL, VSAM, be capable of supervising a small team of operations analysts. You will be expected to become involved in new system implementation at an early stage of development and advise on improvements or problems that may occur from an operational viewpoint. You will be required to keep strict control on all changes to existing systems and to advise on possible improvements. Knowledge of COBOL, CICS and IMS would also be an advantage.

Operations Analyst

Salary £5000 + OT

You should have in depth knowledge of IBM OS/VS1, JCL, Utilities, VSAM and knowledge of CICS TP would also be an advantage. You will probably be working as an operations analyst or similar at the moment.

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Salary £4000 inc. s/a + OT

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**Computer Room
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Salary £8000 + OT

You should have 5 years IBM 370 OS/VS1 or VS2 experience and will probably currently be employed as a chief operator or shift leader. Good man-management skills are essential as you will be responsible for an operations team of nine staff.

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Operators**

Salary £4800 inc s/a + OT

You should have three years OS/VS1 operating experience and be capable of correcting JCL errors. A three shift system is in operation.

Computer Operators

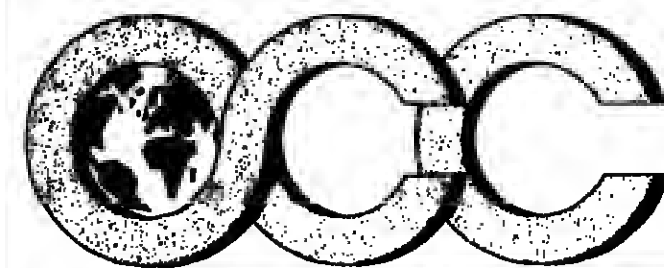
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**Systems Analysts
Programmers
to £8,000
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**The immediate requirement is for
Ten Analysts and Six Programmers**

Analysts should have a minimum of five years' EDP experience of which at least two should be in systems.

Programmers should have a minimum of two years' experience in COBOL, FORTRAN, BASIC or DIBOL. Interactive program development facilities are used in all languages and training will be provided in DEC hardware and software.

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Your background is less important than your desire to realise your potential in an environment which provides scope for growth and recognises and rewards the contribution which you are able to make.

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16 Bedford Row, London WC1R 4EB
01-242 9356
Ask for Neville John

**or PD Computer Services, Faraday
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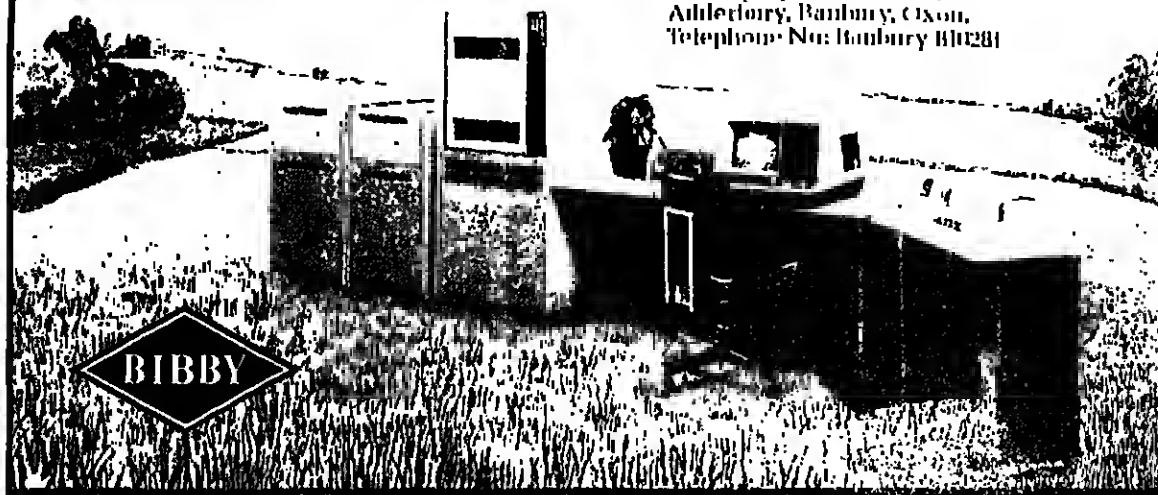
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Closing date: 9 March, 1979.

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Applications are invited from candidates with specialist teaching and research experience in any branch of Computer Science for a Temporary Lectureship within the Academic Division of the Computer Centre. The appointment, which is due to start as soon as possible, is for the period terminating on 31st December, 1980. Candidates who would like to visit the University to discuss the work of the Centre are invited to contact the Officer, Professor P. J. Jarratt (telephone 021-472 1301, ext. 2133), or the Secretary, Miss J. J. Jarratt (telephone 021-472 1301, ext. 2133). Salary will be on the University Lecturer Scale £3800-£7700 (under review) plus superannuation. The minimum starting salary will be determined on the basis of qualifications and experience. Further particulars of the post may be obtained by writing to the Assistant Registrar, Faculty of Science and Engineering, The University of Birmingham, PO Box 363, Birmingham B15 2TT. Applications should be sent to the Assistant Registrar, Faculty of Science and Engineering, The University of Birmingham, PO Box 363, Birmingham B15 2TT.

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We are looking for young and enthusiastic physicists or computer scientists to join the Data Handling Group of the Rutherford Laboratory's High Energy Physics Division. Members of the group are working on all aspects of the computing required for research into elementary particle physics, both at the Laboratory and at international research laboratories in Geneva and Hamburg. Current projects include:

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Telephone Jane Griffiths in the Personnel Group on Abingdon (0235) 21900 Ext. 510, or write to her quoting reference No. VN768. Closing date for applications: March 2nd 1979.



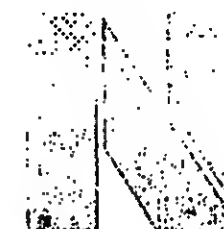
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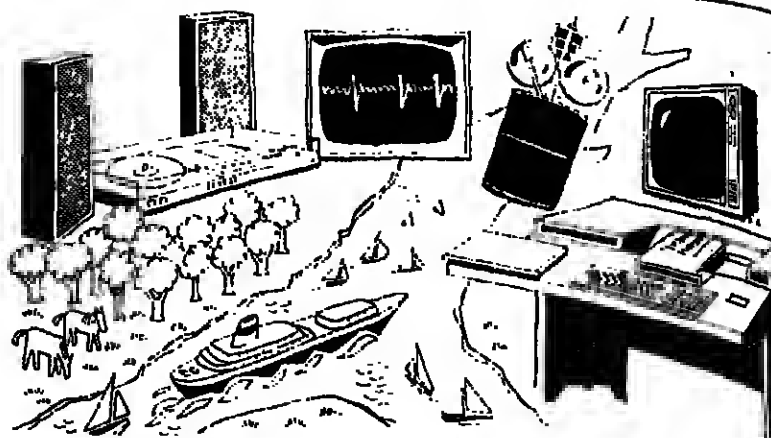
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Programmers:
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If you wish, reverse charges.

Alternatively write quoting appropriate reference to:-
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SA

Computer Centre

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A qualification allowance of either £42 or £72 per annum may be payable.

For an application form and further details please contact The Personnel Office, North East London Polytechnic, 109 The Grove, London, E16 7AL Tel: 01-550 0014 x 32. Please quote Ref. T714/78.

NELP North East London Polytechnic

RPG II PROGRAMMER

We are an international organisation within the printing and packaging industry and because of our continued expansion we have recently taken delivery of an IBM System/34 - one of the first to be installed in the North West. We are now looking for an RPG II Programmer of at least one year's experience.

Working closely with the Data Processing Manager you would have the opportunity to expand your knowledge in all areas of computer programming.

Above average opportunities for

career development for the successful applicant (male/female) who must have a sound educational background and the determination to succeed.

We offer an attractive and progressive starting salary and excellent working conditions.

Please ring John Ottway our Personnel Manager on 0161-799 8131 for an application form or write to him at:

Markem Systems Ltd, Ladywell Trading Estate, Eccles New Road, Salford M6 2DA.

**MARKEM
SYSTEMS LTD.**

MINI ASSEMBLER PROGRAMMERS
North London to £27500

A large international company has undertaken a number of new development projects in the commercial and Real-Time fields, & so require several programmers with at least 2 years experience in commercial applications using Fortran. Any Real Time experience would be of interest but this is not essential since full training will be given. The company offers varied and interesting work coupled with a full range of company benefits.

Reference HK6/1

FORTTRAN PROGRAMMERS
City to £8000 + Mortgage

An International Banking organisation in the heart of London is seeking MACRO ASSEMBLER people with a minimum of 12 months' experience.

The company uses DEC PDP11 equipment, and is currently developing an On-Line System, so any experience in this field would be advantageous. Salaries will be exceptionally good, and the package will include a Non-contributory Pension Scheme, Interest free Season Ticket Loans, an annual Bonus Scheme and a 2½% Mortgage.

Reference HK 6/2

PDP 11 PROGRAMMERS
London & Home Counties to £8000

If you have had at least 1 year's experience of programming on PDP 11's we have many vacancies which will be of interest.

Your experience should include programming in either BASIC +/BASIC +2 ASSEMBLER or FORTRAN under RSTS, RSX11 etc. Applications vary from highly technical to commercial and telecommunications.

All positions offer excellent salaries combined with the opportunity to progress in your particular field.

Reference HK 6/3

IBM OPERATIONS MANAGEMENT
West London to £6000

Opportunities available for senior operations people to move into management. You must have either 4 years IBM sys 3 or 2 yrs IBM OS JCL experience. Excellent salaries are offered for these challenging positions.

Reference MH6/4

IBM 370 OS SHIFT LEADERS
West London to £5750

2 large manufacturing companies require shift leaders and senior operators, working either a 2 or 3 shift system. 3 yrs experience including some JCL knowledge necessary. Both companies offer good career prospects and excellent perks.

Reference MH6/5

IBM 370 DOS OPERATORS
All Areas to £4500

Junior and senior operators with 6 mths + DOS experience urgently required, by clients working a full range of shift patterns, including day shift only. All positions offer competitive salaries and some offer subsidised mortgages.

Reference MH6/6

ICL GII/III OPERATORS
East London to £4500

Large installation on borders of the city requires operators with a minimum of 9 mths experience, on any ICL equipment. Perks include annual bonus and staff restaurant. Good career prospects including programming in the future.

Reference MH6/7

**Recruitment
Advertising
Consultant****£8,000 + Bonus + Car**

DataScene Recruitment Limited is one of the leading computer Recruitment Specialists handling positions in the computer industry at all levels up to senior management appointments.

We are currently looking for someone to take over existing clients and to seek out new business in offering our recruitment package.

This will involve advising clients on advertising, presentation, verbiage and artwork, and then co-ordinating the response, interviewing applicants and presenting a curriculum vitae of each person. These are forwarded to the client for discussion on which applicants they wish to interview.

We require someone who has a background in either systems analysis or programming, a strong personality, and a flair for being successful.

Company benefits include a good basic salary, bonus and a company car after an initial period. If you are interested and require further details please contact Mike Deuncay on 01-439 1856.



Computing
Services
Association

COBOL PROGRAMMERS
City to £5000 plus Mortgage

A major financial organisation with an expanding ICL 2900 system is seeking several COBOL programmers. These positions will be ideal for people with 12 to 18 months' experience on any mainframe, and who want ANALYSIS prospects.

The company offers high starting salaries, Season Ticket Loans, Flextime and a Subsidised Mortgage. Reference PG8/9

PL1 PROGRAMMERS
West End to £5500 + Mortgage

A leading commercial organisation with an expanding 370/135 installation in the West End is seeking a number of PL1 programmers to work on a variety of new and existing projects.

The positions are ideal for enterprising young programmers with at least twelve months experience on IBM Hardware. A knowledge of OS/VS1, although not essential, would be a distinct advantage. The company offers a first class salary, and the many generous fringe benefits include Flextime, Season Ticket Loans, and a Subsidised Mortgage.

Reference PG8/10

RPG II ANALYST/PROGRAMMERS
City to £8000 plus Mortgage

RPG II people at all levels are needed for this financial company based in the City. The experience required varies from 18 months to 5 years, covering PROGRAMMERS, ANALYSTS, and PROJECT LEADERS.

TP and Data Base work will be involved, promotion prospects are superb, and benefits include LV's, Free Pension, Season Ticket Loans, and Subsidised Mortgages.

Reference PG8/11

UNIVAC OPERATOR
C. London to £5500-£6000

A minimum of 2 years experience required for large 1100 site. The perks include possibility of mortgage assistance, no nights and excellent career prospects. IDEAL for operator frustrated by stilled promotion and night work.

Reference SO6/12

UNIVAC SENIOR OPERATOR
C. London to £4300

Major manufacturing company requires an operator with a minimum of six months experience on UNIVAC hardware. A good two shift system, no nights, is worked, with ample opportunity for overtime. Perks include travel assistance and cheap company produce.

Reference SO6/13

HONEYWELL OPERATOR
All Areas up to £6000

If you have a minimum of one year's level 68 with a good understanding of GCOS and feel underpaid, or your shift system does not suit, don't hesitate to call, there are several companies who could change this.

Reference SO6/14

DEC PDP SYS 10 OPERATOR
S. London to £4500

A large Government department is looking for a PDP operator with a minimum of one year's experience preferably on DEC 10's. The main advantage is there are no nights in this post and a good deal of time spent on days only.

Reference SO6/15

**Real-Time in Holland
and throughout the Benelux....**

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PERMANENT**ESSEX****Systems Analyst & Programmer to £6.5k**

If you are looking for a dynamic working environment, rapid career progress, and good training facilities based on an IBM Real-Time network located in a country setting where living costs are low, then please now and enhance your lifestyle. ICW28

Systems Analyst to £7k

If you are looking to perfect your Real Time expertise then our Client would be very eager to discuss this with you immediately. Based on a cluster of last Univac machines the network is currently supporting over 145 terminals. 2CW28

Systems Analysts/Programmers to £7k

If you are a good Analyst with financial or manufacturing experience or a competent COBOL or ASSEMBLER Programmer interested in developing large On-Line Real-Time systems then our Client would be very keen to meet you now. Please for a quick interview. 3CW28

Senior Analysts to £7k

A large manufacturing and wholesale Company is seeking persons with sound Analysts experience to develop and improve the business. Based on a large IBM configuration, these opportunities provide you with an excellent chance of furthering your career immediately. Please now for a quick interview. 4CW28

Project Leaders**Analysts****Programmers/Systems Programmers****Shift Leaders to £7k**

Our Client, a large multinational Company using IBM 370 kit under OS/VS1 is looking for persons with sound experience in the various disciplines listed to enable them to undertake major projects in both commercial and technical. Please contact us now for a quick assessment of your chances. 5W28

Systems Designers to £7k

If you want really good experience as a Designer then here is an excellent opportunity to do so now. Our Client is looking for persons with good analytical and design capability preferably on IBM kit, to help them with a new development project. Please now for more details. 6CW28

Analysts/Programmers to £6.5k

If you have at least two years' good experience in either COBOL, ASSEMBLER or PL1 and you would like to progress rapidly into either Analysis or Project Management or even Software development then our Client would be very interested in talking to you immediately. Several large Company benefits are offered with these very interesting positions. 7CW28

CENTRAL LONDON/CITY**Project Leaders****Analysts****Programmers to £8k**

If you have two or more years' experience on POP kit and are looking to improve your experience, status and life style then please get in touch with us now. If your experience relates to RSX11 O or M and MACRO 11 so much the better! 8CW28

Systems Analysts**Senior Programmers****Programmers to £7.5k**

Our Client is looking for a good team to supplement its already growing and fast expanding complement of O.P. professionals. So, if you feel you can 'take the bull by the horns' and make a go of an extremely interesting and also exciting situation which does of course include excellent career progress, please us now. Programmers need to have good COBOL and the Analysts a sound commercial background. 8CW28

If you can't see anything here that suits you, still get in touch with us — We have many additional well paid vacancies in Essex and the City.

Telephone — John McLean for an up-to-date list of current opportunities on —

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Sceptre House
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01-439 7871
24 hour answer phone

Communicate with Racal

Opportunities with Racal Systems Analysts

RACAL

The Racal Group are currently leading the way forward in developing systems for the ICL 2960 using VME/B. The positions at the Bracknell location offer Systems Analysts the chance to involve themselves in Real-time production, Marketing, Distribution and Financial Projects, all of which are essential to the continued development of the Racal Group.

The planned TP applications are bringing the various ICL sites on-line to the main frame. DMS is in use and we have a continuous development plan for the major companies in the group.

Applicants will have a minimum of 18 months experience in systems analysis and involvement with at least one major project is essential. A programming background would be advantageous, as would a professional qualification and BCS membership.

In addition to competitive starting salaries these positions offer over 4 weeks annual holiday, a contributory superannuation scheme and free life assurance. Opportunities for advancement exist in all of these positions.

If you are interested in these vacancies then please write, or phone, for an application form to The Manager: Group Personnel Services, Racal Group Services Limited, Western Road, Bracknell, Berkshire. Tel: 3244 Extn 149.

UNIVERSITY OF LONDON DEPARTMENT OF MECHANICAL AND CIVIL ENGINEERING EXPERIMENTAL OFFICER

The Department of Mechanical and Civil Engineering with its 12 research groups is seeking an experimental officer to assist in the work on the design and construction of computer based systems of control and process.

The person appointed will be responsible for the design and construction of computer based systems of control and process, and will be involved in the design and construction of computer based systems of control and process.

Candidates must be graduates with an appropriate degree in Mechanical Engineering or a related discipline. A minimum of 2 years experience in the design and construction of computer based systems of control and process is required.

Application forms may be obtained from the Department, The University of London, 100 Brook Street, London W1A 2AA. Tel: 01-625 3100.

University of London Computer Centre

Communications

The University of London Computer Centre provides a regional computer service to the University of London and to the Universities in the South East and South West of England. The Centre is currently equipped with Control Data 7600, 6800, 6400 and Cyber 72 computers and supports a large communications network of over 50 remote batch terminals and 30 keyboard terminals.

A large overall development programme is planned which will include substantial replacement of the existing equipment in the early 1980's.

The Centre is expanding its NETWORK TEAM to implement an existing programme that will give wide Network Access to its existing and future mainframes. The team will also make a significant contribution to new Network Facilities for the University Community.

Staff are required for both software and hardware development in the following areas:

Large Mainframe Front-ending Advanced Packet Switched Techniques Microprocessor Applications

Posts are available at several levels, and there are opportunities for both those with existing experience and for recent graduates — final year students wishing to make a career in this expanding area.

Candidates should preferably have a degree in the Natural Sciences, Computer Science or Electronics.

Salary will be commensurate with age and experience on scales £3,364-£7,764 (under review) plus £450 per annum London Allowance.

The Centre offers excellent conditions of service and operates the Universities Superannuation Scheme.

Further details and application forms are available from the Assistant Secretary, ULCC, 20 Guilford Street, London WC1N 1QZ.

Applications close 16th March, 1979.

MICROPROCESSOR APPLICATIONS

BFN Metals Technology Centre, a large international R&D organisation in the metals industry is extending its exploitation of microprocessor devices to further applications including process monitoring and control, automatic safety checks, machine operation sequencing and production control in non-ferrous works. A well-qualified and experienced technologist is required to explore potential applications, design appropriate hardware/software systems and pursue resulting development projects. Backed by other BFN staff in engineering design, control circuitry, and system specification, candidates, male or female, must be capable of acting on their own up to top management levels in initiating and undertaking projects in various parts of industry.

We offer excellent prospects, competitive salary dependent on experience and qualifications and a subsidised staff restaurant. Write for application form quoting ref. AC15 (C.V.) to The Secretary at the address below.

VIDECOM HENLEY-ON-THAMES.

Mini-Assembler Programmers Top Salaries and Worldwide Travel.

Videcom Ltd are manufacturers of the world's first multi-host computer terminal facility with an impressive installed base worldwide, including numerous international airlines and major corporations utilising its products in sophisticated communications networks. Due to continued rapid expansion Videcom urgently require experienced Assembler Programmers.

If you have 1-4 years mini-computer programming experience and live within commuting distance of Henley-on-Thames then this could be the career opportunity you've been looking for.

If the prospect of working on the design and development of software for some of the most advanced communications equipment is appealing then come and talk to us.

Salary is negotiable — we'll certainly pay you your worth and offer you a range of fringe benefits normally associated with an international company. Phone Logistix on 01-491 4636 who are retained as selection consultants or write to Mrs. M. Barker at Videcom Ltd, Newton Estate, Reading Road, Henley-on-Thames, Oxon, RG9 1HQ.



360 Oxford Street,
London, W1N 9HA.
Tel: 01-491 4636

Technical Author (Software) Technical Author (Hardware)

Applications are invited from men and women with experience in the writing of technical publications (preferably but not necessarily relating to the computer industry) or an interest in documentation and a suitable background e.g. in digital electronics or computer programming.

Successful applicants will join our Wythenshawe Division where we design and manufacture computer systems for a wide variety of applications at home and abroad. Oil field telemetry and control, communications systems and motorway traffic control are typical applications based on our successful ARGUS 700 range of minicomputers. We require comprehensive user documentation of a high standard to accompany our high technology product. To this end our authors work with engineers and programmers in one of our specialist design teams.

Attractive salaries will be offered to the right candidates and opportunities exist for advancement in this expanding area. A productivity scheme is in operation, a bonus being paid quarterly.

The Wythenshawe Division premises are located in a pleasant semi-rural area on the South Manchester/Cheshire border and general working conditions are of a high standard.

Applications in the first instance by letter please to:

W.L. Robinson, Ferranti Computer Systems Limited, Wythenshawe Division, Simonsway, Wythenshawe, Manchester M22 5LA, quoting reference 79WD/2CW

FERRANTI
Computer Systems

Britannia Building Society

We are a national building society with assets exceeding £1000 million. We are expanding our Computer Development Department and therefore require the following to work at our Head Office in Leek, Staffordshire.

SYSTEMS ANALYST (£4572 p.a. - £5850 p.a.)

At least two years' relevant experience required

PROGRAMMER (£4158 p.a. - £5010 p.a.)

At least two years' relevant experience required

We have one of the most sophisticated real-time and distributed processing systems in the building society movement. Our System 4/22 is now set to be replaced by a large 2900 in 1981. Many of our branches are equipped with Odetics minicomputers.

Newton House is situated on the outskirts of Leek, a pleasant town on the edge of the Peak District. Although set in a rural environment the office is within easy reach of large towns and cities.

In addition to salary there are several fringe benefits that make our attractive employment package.



Applications forms available from:
Mrs. J. Wainwright
Deputy Head of Staff Operations
BRITANNIA BUILDING SOCIETY
P.O. Box 20, Newton House
Leek, Staffs., ST13 8RO

or if you want to talk to a specialist, ring Leek 0530 301131 and ask for Geoff Proton, Computer Development Manager.

WOOTTON, JEFFREYS & PARTNERS

Established in 1971, we are a medium-sized consultancy with offices in Brookwood, Surrey and Manchester. We offer services in:

- * Transport Planning
- * Computing
- * Management Science

Our clients include central and local government and a wide range of all sizes to whom we supply:

- * Professional advice
- * Computer packages and Technical Support

The Partnership wishes to expand its computer based services in the North West and requires —

PROGRAMMER/ANALYST

for the Manchester based regional office. The successful candidate will be responsible for promoting and developing a wide range of computer based services in the North West and will be involved in the design and development of computer based systems of control and process.

Salaries in the range £4,800-£6,000 p.a. depending on experience.

Please send career details to: Richard Jeffreys & Partners, 4th Floor, 100, Market Street, Manchester M1 2AG (Tel: 061 225 1234).

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By rail, bus and from work, by bus at all times, including weekends a saving that could be worth hundreds of pounds a year.

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NALGO membership brings you privileges like discounts on a very wide range of goods and services, including car insurance and H.P.

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There's a very lively sporting scene, including cricket (Old Trafford), soccer, rugby, tennis, squash and golf, real beer, thriving clubland, some of the thrills.

Countryside
Some of Britain's most beautiful countryside is within easy reach, including the Lake District, Peak and Snowdonia national parks. And Manchester and its satellite towns offer some of the finest shopping outside London.

Houses
We give you generous help in moving; up to £750 to cover the sale of your old house and purchase of the new, temporary lodging allowance, time to house-hunt, etc. And it's possible to live on the edge of the country only 10 miles from the City centre.

Send application or request for further information to:
Mr J S Thorsfield, Recruitment Manager
GREATER MANCHESTER PASSENGER TRANSPORT EXECUTIVE
2 Devonshire Street North, Ardwick, Manchester M12 6JS.

A TAILOR-MADE PACKAGE FOR DP SPECIALISTS

Greater Manchester Passenger Transport Executive is the largest passenger transport operator outside London, serving 294 million people and covering 500 square miles. The Systems and Data Processing Department is now undergoing major expansion. If you are an ambitious dp specialist, join the team and you'll be getting more than just a top salary. Analyse the package for yourself.

SYSTEMS DESIGNERS To £6,800

To design and implement cost-effective applications within the Corporate Systems Development Plan.

DESIGN ASSISTANTS To £4,500

PROGRAM DESIGNERS To £6,000

To prepare program structure specifications, and supervise programmers in implementing them.

PROGRAMMERS To £4,500

To write mainly COBOL, but some FORTRAN.

Communications Planning

Location: Midlands

Our client, a major manufacturing company with many diverse locations in the United Kingdom, wishes to recruit two people to be responsible for, and deeply involved with, future communications planning.

The two positions require a similar background in terms of past experience and technical skills. In terms of future interest, they are probably slightly different.

The first position will be responsible for maintaining the development of current communications systems and ensuring that these systems are efficient, and can cope with the short term demands of the company. This position will have very close contact with the second position which is responsible for the longer view and the planning of future communications systems.

Both positions are very important in terms of future company development. In your late 20's or early 30's, your

Excellent income plus substantial fringe benefits

experience will have included the design and installation of advanced data and speech networks plus systems analysis, and design on small computer systems (telecommunications software). You also should have proven skills covering the areas of planning networks, switching and communications terminals. You will be good at managing people.

These positions are not easy to fill, as we are looking for not only the technical skills but the right attitude of mind. However, the career opportunity offered is very good. It is not often one meets a company that is so committed to the development of communications systems.

If you are interested in either of these positions, please WRITE to John Goldsmith, setting out in some detail your career to date, and indicate which of the two positions you are most interested in.

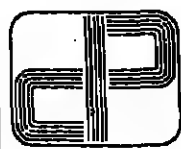
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Limited**

EXPERIENCED OPERATORS and CONTROL CLERKS

Salary — £4,400 (with review in June)

Once again our expansion plans — which include the installation of an ICL 2972 in the summer — require us to recruit experienced operators and control clerks.

Our present configuration consists of an ICL 2980 plus 2 x 4772s.

If you would like the opportunity to work with one of the most efficient Operations Teams in the country, please get in touch with us — we pay our staff well but we demand the best so please do not bother to apply unless you are prepared to work hard.

Three shift working is in operation and we offer four weeks' holiday after one year's service in addition to a 32½-hour week (if you could see the operators stagger out of the computer room at the end of their shifts you would understand why we have such a short working week!). If you are good at your job and would like a fresh challenge then why not write to, or telephone

ipc

**Alan Merrion
Operations Manager
COMPUTER DATA
PROCESSING LTD.**
Oakfield House,
Perryman Road,
Haywards Heath, Sussex
Tel: Haywards Heath 58188

SYSTEMS PROGRAMMER

HAMBURG

Starting Salary £13,000 p.a.

An experienced Systems Programmer is required for our client in Hamburg, with a good background in Honeywell 6800, IBS II and teleprocessing applications, plus experience of GMAP (Assembler language) and CRTS. This post is for a two year period, and financial assistance will be given for moving and finding furnished accommodation.

Ref: 8 040

ASST D.P. MANAGER

SEOFORO

Our clients, wholesale distributors of hardware and building supplies, offer an interesting opportunity for an experienced person to take responsibility as deputy to the Computer Manager. He/she is IBM System 3, 32s and 34s on order, operating a real-time data-base application. Experience as an RPG II programmer and commercial analysis, plus willingness to travel to user sites is part of the planned expansion in the development of new on-line systems.

Ref: 8 022

Applications in strictest confidence to:
X-Calibur CONTRACT SERVICES
DUKE HOUSE, 2 DUKE STREET
BEDFORD MK40 3HR
Telephone: Bedford 48577

Computing Services Association
Agency Licence 56(A) 3345

X-Calibur
CONTRACT SERVICES

SYSTEMS MANAGEMENT

£7,000 to around £8,500

Two key members of our systems team are being promoted as a result we offer a career opportunity for thoroughly experienced men or women prepared for a management role in Systems.

The jobs involve leading a compact team in developing systems for a dynamic Retailing and Distribution environment. They involve systems expertise plus ability to work constructively with senior executives in a variety of functions, and to motivate systems staff.

We have an ICL 2950 with GME, and a short-term conversion programme to VME/K.

Our two into working environment, with subsidised restaurant and discount purchasing facilities, within easy travelling distance of a wide variety of urban/rural homes in Worcestershire/Warwickshire. We'll play a displacement allowance should you have to move.

Further career prospects in the company, and in The Barmah Group, are excellent.

Write initially to:
L. T. Richards, Hattfield Ltd., Icknield Street
Olve, Washford West, Redditch, Wores.

HALFORDS
A BARMAR GROUP COMPANY

CAREERS in SCIENTIFIC COMPUTING and ELECTRONIC ENGINEERING

CHALLENGING OPPORTUNITIES TO WORK ON:

- MICROPROCESSORS
- REAL-TIME PROGRAMMING
- NETWORKS
- LOGIC DESIGN
- INSTRUMENTATION
- ACCELERATOR CONTROL SYSTEMS

Daresbury Laboratory is developing major national facilities in the fields of computer networking, atomic, molecular and biological sciences and nuclear physics. The exploitation of these facilities requires first-class computing support. Computers at the laboratory include an IBM 370/165, GEC 4070s, PDP-11s and Interdata.

- **COMPUTER NETWORKS:** Development and support of communications software for interactive terminal, graphics and remote job entry access to the SRC's computing centres using microprocessor based communications hardware and mini-computer packet switches and front end processors.

- **LOGIC DESIGN:** Interface design for mini-computers using the latest microprocessor techniques, also communications interfacing for remote data processing. Specialised design of data acquisition systems.

- **DATA ACQUISITION:** Programmers are required for the development of data acquisition systems using LSI and PDP-11 computers connected to an IBM 370/165. There are opportunities to work with large and small systems in an stimulating scientific environment. Relevant programming experience would be an advantage but is not essential.

- **INSTRUMENTATION:** Design and development of specialised analogue and digital instrumentation for processing electrical signals from a wide range of charged particle and photon detectors. The most up-to-date facilities for R&D are available.

- **ACCELERATOR CONTROL SYSTEMS:** Development of an on-line process control system for the Daresbury Synchrotron Radiation Source (a 2 GeV Electron Storage Ring), using Interdata computers. Experience in programming in both high level and assembler languages, and also in digital interface hardware, would be an advantage.

Applicants should have a good honours degree in a relevant scientific discipline. Appointments will be made depending on qualifications and experience at SO level.

Scientific Officer - £2,839-£4,415
(Salaries are currently under review)

Closing date: 15th March, 1979.

Please write or telephone: Warrington 65000. Ext. 467, for an application form quoting reference No. DL/85/W.

The Personnel Officer

DARESBURY LABORATORY
Science Research Council
Daresbury, Warrington WA4 4AD.

PROGRAMMER

Salary £5,500 p.a.

We require a Programmer to join our young and enthusiastic Data Processing Team. Our company is extremely successful and we can offer you a secure future, a good salary in the region of £5,500 per annum according to age and experience, the Pension and Life Assurance Scheme, very attractive staff order facilities, a three course meal for 10p a day, and after an initial period a bonus scheme and Mortgage Subsidy Scheme.

The successful applicant must have a minimum of two years' PDP 11 experience and we currently operate a 224K System 3 Model 150 with 24 V D U's on line, and further major enhancements are planned in the near future to keep pace with the Company's rapid growth.

Please ring for an appointment

Tony Batchelor
Data Processing Manager
01-804 8101

Tricity Finance Limited

Lombard House, Southbury Road, Enfield, Midd.
(A Member of the National Westminster Bank Group)

Systems Analyst

WEMBLEY — 10 LINDEN 4 ROOMS.

THE COMPANY — is a large group in the construction and allied industries.

THE OPPORTUNITY — to establish yourself in a senior role in a small but expanding department.

THE REQUIREMENTS — a minimum of 5 years' D.P. experience in a commercial environment.

- the ability to communicate with and educate user personnel at all levels.
- experience and ability to take total responsibility for the development and implementation of systems.
- knowledge of D.P. systems based on I.B.M. 3270 (preferable, although we would consider training an otherwise suitable applicant).
- a programming background of COBOL or similar language.

Please write enclosing C.V. to the Data Processing Manager at the address below, or telephone 01-902 5321 if you require further details.

**KYLE
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Ardehol House, Empire Way, Wembley
Middlesex HA9 0NA

OPERATORS

IBM OS c £5500
Good operator for an International Company in Essex. Supervisory experience plus good technical knowledge for this post.

IBM OS £5800
An installation in Central London requires an operator with three years' experience and some shift/night background.

IBM OS £4500
Operator with six months' experience required by Companies in Central London Essex. Middle.

IBM DOS up to £5000
Operators with two years' experience are currently being sought by two installations in West London. Excellent career prospects for promotion to Shift Leader.

IBM SYSTEM 3 c £4000
Financial Institution requires an operator with at least one year's experience.

ICL 2900 £4700
Operator required for site based in Essex. 1-2 yrs. Exp. 2900 exp. preferable.

ICL 2900/1900 £4400
Installations in West London, Middle and Central London offer excellent opportunities for Ops with 1 year's exp. ICL or IBM background.

ICL 1900 £4300
Ops required for sites in Essex and City. Knowledge of ICL or IBM essential.

UNIVAC £4600
Ops required for various sites in London. Possibility of career advancement.

DEC. PDP 11/40 £4000
Operate at site or as operator for Central London in addition to two shifts only.

DATA CONTROLLERS, ALL AREAS
£3000-£5000

TARGA COMPUTER SERVICES

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Are you up to maintaining some of the most sophisticated digital systems around?

Enfield based

Eastern Gas currently operate and are developing sophisticated computer based management information systems for its national and local gas companies.

We are rapidly expanding the field and need a person with engineering experience with computers in digital systems, experience in set up and lead a small team specialising in the maintenance of this equipment. If you have an Electrical or Electronics qualification so much the better, but more important is some years' practical experience.

Although based at Enfield there will be some travelling involved throughout the Region for which a current driving licence is essential. A generous car-mileage scheme is in operation.

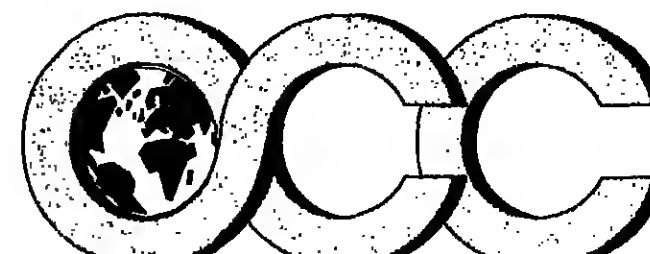
In addition to an attractive salary there is a current cost-of-living productivity payment and fringe benefits include generous holidays, staff restaurant and sports and social facilities. Relocation expenses will be paid where appropriate.

If you want a new and challenging career with an important Region of one of Britain's leading energy industries then why not write to the:

Senior Recruitment Officer
Eastern Gas, Star House
Milton Lane, Porters Bar, Herts EN6 2PD

Please quote reference 3360/CW.

EASTERN GAS



*Specialists since 1971 in UK and International
computer appointments.
We have many other jobs on our files and
offer a career counselling service
to computer professionals.*

Operations Vacancies

Uxbridge

Multi machine Data Centre

- IBM 3031 & ITEL AS/5-OS/VS1
- ICL 1903T - George II
- Excellent career prospects
- Training given on all hardware & software
- Generous relocation package

The Data Centre, which serves the needs of a thriving commercial group, has been expanded by the recent addition of an IBM 3031. This leads to the need to recruit the additional staff listed below. The bureau runs on three shifts - Sunday to Friday and the salaries quoted include shift allowance.

Shift Leaders £5,750-£6,750

The Shift Leader has reporting to him three senior operators, each of whom is responsible for one mainframe. High level managerial and technical skills are required for these senior jobs. An ideal technical background would be IBM 370 OS/VS1 under VM although a candidate of exceptional drive and supervisory ability with a 1900 George II background would be acceptable. All candidates should have 5 years + operations' experience.

Shift Technician £5,150-£6,150

The Shift Technician has wide ranging technical duties concerned mainly with IBM JCL, ICL George Macros, etc. It provides an opportunity for a technically minded senior operator to put his ideas into practice. Previous IBM experience with a good practical knowledge of JCL is required.

OCC Computer Personnel Limited
16 Bedford Row, London WC1R 4EB

To apply, please write, complete the coupon or ring, asking for Marian Tabone on 01-242 9356 (day) or 01-555 5568 (evenings and weekends). If your experience is suitable, we would like to meet you to discuss matters further. Meetings can be arranged at the Data Centre in Uxbridge if this would be more convenient.

Comprehensive background notes are available to suitable candidates.

Senior Operators £5,150-£6,150

Each Senior Operator on a shift is responsible for one of the mainframes mentioned above. Candidates should have 3 years' experience and must be capable of scheduling, organising staff and training juniors. A background on either ICL or medium ICL or IBM mainframes is required. Training will be given to fill in any gaps in knowledge. Rotation between machines will be introduced in the future.

Shift Librarian £4,300-£5,300

The Shift Media Librarian controls the library on shift. A background in Data Control would be suitable. The main requirements being a very accurate and methodical approach to the work. A good clerical accounting background could be suitable.

Members of
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Association

I am interested in the position.

Name:

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IMI SUMMERFIELD

Invite applications for the position of:

Systems Analyst/ Programmer

IMI Summerfield, a member of the IMI Group, carries out research into and development of solid propellant rocket motors. It is situated in a rural part of Worcestershire about two miles south of Kidderminster.

Due to re-organisation within the Computer Section of the Rocket Motor Design and Development Department, a vacancy has arisen for a Systems Analyst/Programmer. The successful applicant will work on an extensive range of projects covering a wide variety of scientific disciplines and management control systems.

Applicants will preferably be qualified to a minimum of Higher National Certificate together with experience of programming

and/or systems analysis. The preferred programming language is Fortran 4, candidates having in addition some knowledge and experience of using an assembler language may find this to their advantage.

Employment conditions include a profit sharing scheme, up to 23 days annual holiday and a contributory pension fund.

Applications in writing from men and women quoting reference number 1/79/CPW, should be sent to:

The Personnel Officer (Staff),
IMI Summerfield,
Kidderminster,
Wores, DY11 17RZ.

Telephone numbers:
Kidderminster 4061.

Ambitious Programmers

(Our future is your success)
Various U.K. Locations, to £9,000 + car allowance
To complement the company's further expansion programme, a number of exciting ground floor opportunities exist within Europe's fastest growing manufacturer of mini-computer based business systems.

Part of a small yet highly professional team, responsibility will be for handling a wide variety of computer problems and packages with particular emphasis on financial and process control systems.

The diverse range of products they give rise to is reflected in new development activity, the firm's flexible approach, together with a positive and practical outlook is essential.

The current management is young and energetic and there are excellent realistic career prospects in senior line appointments.

Candidates should have a minimum of 1 1/2 years' computer experience and preferably an understanding of BASIC + languages and a good knowledge of the company's products.

Attractive fringe benefits with relocation assistance if required.
L. Hollwell, Ref: 100/79
Male or female candidates should send their CVs in confidence for a Personal History Form to:
LETS 100/79

PROJECT LEADER

Atcost Limited, one of the U.K.'s leading manufacturers of structural frames, requires an experienced Programmer/Analyst to take charge of their computer installation and develop systems within the D.P. environment.

Reporting directly to the Group's Financial Controller, applicants should have solid RPO-11 experience and be capable of dealing with a wide range of commercial applications.

An IBM System 33 is currently being used, but it is planned that on the appointment of a suitable Project Leader, IBM System 34 or other machines will be evaluated to enable a complete upgrade of our applications.

An exciting career opportunity is offered together with a salary of £6000 p.a. and a pleasant working environment in offices overlooking The Pantiles in Tunbridge Wells.

If the challenge appeals to you, then please contact:

David Small
Atcost Limited
The Pantiles, Tunbridge Wells, Kent TN2 5TH
Tel. Tunbridge Wells 28288

ATCOST

Programmer

N.E. Kent, c. £5,600

This major manufacturing company is currently increasing the capacity of its DP installation to meet projected demand. New equipment to replace the existing 1901 A is being evaluated. Thus an ambitious young programmer will be faced with the challenge of making a real contribution to the development of new systems as well as revising existing applications.

Candidates will have at least one year's experience as a COBOL programmer, ideally gained in a manufacturing environment. The ability to work as a member of a small team with minimum supervision is essential. Knowledge of NICOL would be an advantage. The position offers excellent prospects of progression to systems analysis and further career development.

E. Sutton, Ref: 17050/CW

Male or female candidates should telephone in confidence for a Personal History Form to:
LONDON: 01-734 6852, Sutherland House, 3/6 Argyll Street, W1E 6EZ.

Hoggett Bowers
Executive Search Consultants
BIRMINGHAM, CARDIFF, GLASGOW, LEEDS, LONDON, MANCHESTER, NEWCASTLE, SOUTH LONDON

Computer Scientist for Research and Development

c. £6,500 South Coast

required by a major international company for its research and development establishment.

You will develop the application of computers to the storage, retrieval and subsequent analysis of data from laboratory experiments, pilot scale studies and factory trials. You will also work jointly with multi-disciplinary research and development teams in establishing both hardware and software specifications of data acquisition systems.

The establishment has terminal access to computers with high-powered capabilities for scientific applications.

You should be aged between 25 and 34, preferably with a 1st class Honours degree in mathematics, statistics and computing, and preferably have sound previous experience of systems designed to handle experimental data.

The salary will be progressive and fringe benefits include flexible working hours, an excellent non-contributory pension scheme and, if appropriate, re-location assistance. The complex is effectively situated close to the New Forest and within easy access of the M27 Motorway and main railway line to London.

Please telephone (01-629 1844 at nty time) or write for information. Ref: FY.8593.

This appointment is open to men and women.

AGL CONFIDENTIAL RECRUITMENT 17 STRATTON STREET LONDON W1X 6DB.
A member of MSL Group International

Oxford and Cambridge
Schools
Examinations Board

COMPUTER OFFICER

The Board has transferred some of its examination administration to the IBM 370 computer of another Board, using Assembler and Cobol, and plans further transfer. An experienced officer is required to work in Cambridge on the development of new programs and control of those in use.

Salary: £128-£1030 (Cambridge University Computer Officer Grade 2)

Further information from, mail applications to The Secretary, Oxford and Cambridge Schools Examinations Board, 10 Trumpington Street, Cambridge CB2 1RQ by 14th February, 1979.

TECHNICAL SUPPORT OFFICER up to £5,358

The duties of this post are to supply technical support to the production team, and also the VME/8 operating system to be used on the Council's ICL 2960. The job will primarily be to assist the Chief Technical Support Officer in the creation and maintenance of a satisfactory operating environment. At least 1 year's support experience is required.

Application form from Personnel and Management Services Officer, London Borough of Greenwich, Paddy Middleton House, 50 Woolwich New Road, London, SE18 8HQ. Tel: 01-854 8888 Ext. 2119. Closing date: 23rd February, 1979.

The Council is an equal opportunities employer. All applicants will be considered, irrespective of sex or country of origin.

GREENWICH

ELECTRONIC ENGINEERS

SMITHS INDUSTRIES LIMITED AVIATION DIVISION have openings in their Research & Engineering Department which will appeal to Engineers who seek a challenging and rewarding vocation. It you are interested in any of the following fields:-

- * DIGITAL HARDWARE/ SOFTWARE (REAL-TIME COMPUTING)
- * ANALOGUE HARDWARE
- * CONTROL SYSTEMS (ANALYSTS & DESIGNERS - FIXED AND ROTARY WING AIRCRAFT)
- * COMPONENT APPROVAL

we have vacancies at various levels in these Design Branches:-

- FLIGHT DECK INSTRUMENTS
- FLIGHT CONTROL SYSTEMS
- TEST EQUIPMENT
- FLIGHT CONTROL RESEARCH
- ELECTRONIC DISPLAYS
- ENGINEERING STANDARDS
- MICRO ELECTRONICS
- COMPONENTS ENGINEERING (GYROS & ACCELEROMETERS)
- WEAPON SYSTEMS (AVIONIC & NAVAL)

Applicants should have preferably a Degree with a minimum of two years experience although relevant experience or other qualifications in lieu would be considered.

Write to H. Upson, SMITHS INDUSTRIES LIMITED



AVIATION DIVISION
Bishops Cleeve, Cheltenham, Glos. GL52 4SF.
or use our ANSAFONE facility:- (0242-67-6358)

WALK IN TO A NEW CAREER

Senior Analysts, Chief Programmer, Senior Programmers, Analysts/Programmers, Operations Staff.

* Big Salaries to £8,000

* Big opportunities for personal growth

If you have worthwhile data processing experience we can almost certainly talk career and money sense to you. If you have a specialisation such as systems programming, minis, PERT or communications our client may be able to create a suitable position to make the best of your skills. We hope you will come and talk to us at one of our successful informal interview sessions.

The Grampian Hotel, Stevenage New Town Centre.

Saturday 10th February 9.30a.m. - 1.00p.m.

Monday 12th February 5.00p.m. - 9.30p.m.

Our client is a successful manufacturing company with an expanding computer department. They have a range of opportunities and an organisation which will allow you to develop your career according to your aptitudes.

Salaries are excellent. A productivity scheme is in operation and the company will give generous help with relocation costs where appropriate.

If you cannot make these dates, call us anyway and we will send you an information pack.



Castle Computer Services Limited

271 Highgate Road, London N6 6LH, Tel: 04427 73151

Software Engineers

Ferranti Computer Systems are expanding their Software Engineering Organisation to meet the immediate challenge of large new contracts for high technology applications.

Vacancies exist at locations in Bracknell and Yateley, and in Cwmbran, Fareham and Weymouth.

Our spectrum of work covers

- Multicomputer Systems
- Fire Control Systems
- Simulators
- Navigation Systems
- Microprocessors
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- Coral
- Mascot
- Software Methodology

If your expertise covers one or more of the areas listed and you would like to extend your experience into new projects, please telephone our Recruitment Office in Bracknell 3232, ext. 471, or write quoting ref. no. D/893/CW to:

Personal Officer, Ferranti Computer Systems Limited, Western Road, Bracknell, Berkshire.

This post is open to male and female applicants.

FERRANTI
Computer Systems

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COMPUTERVISION

Due to continued growth, ComputerVision Ltd. - the major supplier of minicomputer based graphic systems - are currently looking for two experienced sales engineers. Our customers are some of the biggest and best companies in Europe.

We are seeking enthusiasts with experience in either of the following:

- * Technical bureau sales
- * Graphic or plotter systems sales
- * Cad cam user

ComputerVision are offering to the successful applicants:

- * Above average salary
- * Quality company car
- * Free membership of BUPA
- * Opportunity to join a successful team in a highly exciting growth period

For further information please call or write to David Roberts, ComputerVision Ltd., ComputerVision House, Park Street, Buxton, Derbyshire. Telephone: High Wycombe (0494) 714771.

Recruitment **LOGISTIX** in Informatics

Jnr/Snr/Mini/Micro Specialists Denmark

Salaries: £10K - £15K

Our client is the leading Scandinavian Systems and Software Development Group recognised as Market Leaders in its field. Owing to continued expansion in a wide variety of applications areas including Data Communications, Message Switching, Computer Networking and Mini Computer Software, a significant number of experienced career orientated personnel are urgently required.

Emphasis will be placed on technical involvement and in-depth experience in the areas of activity outlined above. Whilst a degree or equivalent qualification in either Computer Sciences or Mathematics is desirable, significant relevant experience will be considered in lieu. Of essence is a

solid Assembler background within a Mini Computer or Microprocessor environment. Project locations are primarily in Copenhagen and suburbs, although candidates can work (should they so desire) in the Netherlands, Sweden or Germany. Of prime importance is demonstrable enthusiasm to relocate to Denmark for an extended period. Every assistance will be given in relocation, including the cost of removal of all personal effects, initial accommodation expenses and a resettlement allowance. Interviews will be held as soon as applications are received and offers of employment will be made within 10 days of interview.

Analysts & Programmers Inner/Greater Manchester

Salaries: c £6K - £8.5K

Our client is a major International Company recognised as market leaders in its field and has retained Logistix to assist in recruiting the following key project team members - Real-time Mini Programmers, Data Base Designers, Communications Programmers and Applications Software Programmers. Experience in any of the following will be especially welcome: RSX 11, RIL 2, Assembler, PL/I, COBOL, IMS DB-DC. For those who enjoy overseas travel there will be ample

opportunity to work at the company's E.F.C. offices in Sweden and the Benelux. Successful candidates must demonstrate qualities of leadership potential, determination and be self starters. It is expected that all staff should have the ambition to achieve Project Management status quickly. Interviews will be held at one of the company's three UK offices most convenient to the candidates residence.

RSX 11 Programmers Netherlands

Salaries: £10K - £15K

Many of the forefront developments in Mini Computer Software and Data Communications are emanating from Europe and if you are a motivated individual with a degree or equivalent Computer Science or Mathematics extensive relevant experience in a job which will most certainly contribute a valuable expertise to the industry, you should be expanding your own threshold of experience through working closely with other professionals at your own level. Our client will pay full relocation expenses for you and your family and provide a generous resettlement advance in addition to meeting the costs of temporary accommodation pending location of permanent housing. Numerous other benefits contribute to make this a very attractive opportunity.

years with a degree or equivalent Computer Science or Mathematics extensive relevant experience in a job which will most certainly contribute a valuable expertise to the industry, you should be expanding your own threshold of experience through working closely with other professionals at your own level. Our client will pay full relocation expenses for you and your family and provide a generous resettlement advance in addition to meeting the costs of temporary accommodation pending location of permanent housing. Numerous other benefits contribute to make this a very attractive opportunity.

Scientific Programmer Italy

Salary: £10K - £12K

THE CLIENT: A multi-national Research and Development Institution is further expanding its team strength in the areas of scientific project implementation and requires several permanent scientific Programmers with Mini Computer Assembler or Fortran experience. Incidentally, we particularly wish to speak to candidates with current or very recent HP 2100 involvement.

THE APPLICATIONS: A wide variety of projects is currently being developed for implementation in the early '80's. Specialist skills in the areas of one or more of the following are especially useful:

Numerical Analysis, Image Processing and Operational Research. The scope and involvement of these applications is likely to be both challenging and interesting and is certain to push the horizon of technical sophistication to the limit. THE PACKAGE: In addition to a very realistic salary the company also provides full relocation expenses, medical insurance and pension schemes as well as initial paid accommodation expenses for you and your family. Interviews will be held in London during mid and late February and offers will be made by the end of the month.

Small Machine Programmers Central & N.W. London

Salary: £5.5K - £8K

A European manufacturer of V.R.C. and Office Business Systems seeks several additional Programmers and Systems Analysts who will be engaged in developing several new challenging commercial applications. The opportunity also exists to develop into IBM mainframe projects at a later date. Suitable applicants must have current experience of writing Programs primarily in BASIC and secondly Business Assembler within the environment of a

Software house/turnkey supplier or manufacturer. Particular hardware experience is much less important but generally knowledge of Kleinze, Nikkor, Olivetti or Philips is significant. Salaries are above market rates and in addition to a comprehensive range of Company benefits including contributory pension scheme, sickness benefit, Project bonus and 4 weeks annual holiday. Interviews will be held in London in February and March.

Logistix, Freepost 32, London W1E 3YZ

360 Oxford St.
London W1N 9HA

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If you've heard of mail order book clubs you'll have heard of Book Club Associates, the largest of its kind in the U.K. and we're successful. We're growing fast! And we're looking for experienced staff for our Management Services Department.

PROGRAMMERS
ANALYSTS
TEAM LEADERS AND
PROJECT MANAGERS

Naturally we'd like to meet anyone who's interested. And we'd like them to meet us. That's why we're holding an informal evening on Monday 12th February at The Regent Palace Hotel, Piccadilly, London.

By popping in for a drink between 4.30pm and 8.00pm not only will we get the opportunity to meet you but also you'll get a chance to really meet us and find out all you'd like to know about our company. And we think that's important.

I can resist everything except temptation - Wilde

We're situated in central Swindon, Wiltshire but only 10 minutes from Junctions 15 and 16 on the M4 and under an hour from London and linked by high-speed train. You can live in reasonably priced housing perhaps in the Cotswolds or Wiltshire Downs and forget about traffic jams and long commuter rail journeys. Also you can work on ICL New Range Equipment. We can offer competitive salaries, non-contributory pension scheme plus a generous staff discount scheme, and relocation expenses where appropriate. So come along and find out for yourself what's on offer. The chances are we'll have just the job you're looking for. If you're unable to come along on the 12th but would like to know more about our vacancies please telephone Richard Braybrooke on 07931 36271 or write to him at Book Club Associates, Bridge House, Penny Street, Swindon, Wiltshire.

Computer Operations

Your chance to stop working those shifts

We wish to recruit someone to be responsible for our in-house computer operations facility. Shift working is not involved. This is a new position and the main task will be to improve and extend the present facility which also includes a data preparation service and software library. The ideal candidate will already be working in a similar environment, ideally with DEC hardware (ours are PDP 11s and PDP 8s) and currently earning between £4,000-£4,500.

He or she will be:

- * Looking for the responsibility that comes with managing people.
- * Interfacing with user departments at all levels.
- * Able to define standard procedures and get them established.
- * Familiar with software and programming languages.

If you would like to know more please contact us.



Wendy Villegas, Personnel Department
Kent Automation Systems Limited
6 Hunting Gate, Hitchin, Herts. Tel: (0482) 64601
A member of the George Kent Group of Companies

SHIFT LEADER

Up to £8,039 p.a.

A Shift Leader is required to lead a team of operators/control clerks who will run the ICL 2860 soon to be installed in Walsworth. A good practical knowledge of either VME/B or System 4J level is required as well as at least three years in senior operating posts. A two-shift system will be worked and the salary quoted includes the appropriate allowance.

Application forms from Personnel and Management Services Officer, London Borough of Greenwich, Peggy Middleton House, 60 Woolwich New Road, London SE18 6HD (Tel: 01-854 8888, Ext. 2118).

Closing date: 23rd February, 1979.

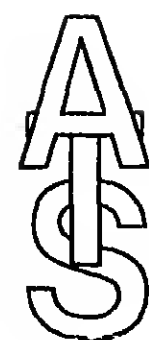
The Council is an equal opportunities employer. All applicants will be considered, irrespective of sex or country of origin.

GREENWICH

UNIVERSITY OF BRADFORD

Computing Laboratory
SENIOR COMPUTER OFFICER

Ref. CU/SC0/25W
Applications are invited from graduates or professionally qualified persons for a post in the University's Computing Laboratory which operates a large ICL 19046 installation providing a central service for research and teaching within the University. The successful applicant will head a team of three Computer Officers responsible for the George 3 Operating System and associated software and will report directly to the Chief Computer Officer. The post requires programming experience and knowledge of George 3. Salary on scale £3,883 to £7,765 p.a. (under review). Applications should be sent to the Personnel Officer, University of Bradford, BD7 1DP.



COMPUTER RECRUITMENT DIVISION

OPPORTUNITIES FOR ANALYSTS & PROGRAMMERS

Ref.	Mfg.	Job	Experience	Location
6001	IBM/OS	Senior Programmer	3 yrs. COBOL/ASSEMBLER	City
6005	IBM/OS	Programmer	3 yrs. COBOL/PL1	SW London
6076	IBM/OS	Project Leader	3 yrs. COBOL Team Leader	Midex.
6076	IBM/OS	Analyst/Programmer	3 yrs. COBOL	Midex.
6101	IBM/OS	Programmer	2 yrs. COBOL	Surry
6108	IBM/OS	Analyst/Programmer	2 yrs. PL1/ASSEMBLER	City
6110	IBM/OS	Programmer	18 mths. PL1/ASSEMBLER	City
6005	ICL/62	Systems Analyst	3 yrs. Systems (large mainframe)	Midex.
6008	ICL/62	Senior Analyst	6 yrs. Systems	Midex.
6009	ICL/62	Senior Programmer	3 yrs. COBOL	SW London
6022	ICL/62	Senior Programmer	3 yrs. PLAN	Midex.
6087	ICL/OS	Programmer	2 yrs. COBOL	West End
6091	ICL/62	Senior Programmer	3 yrs. COBOL/PLAN	Midex.
6112	ICL/OS	D.P.M. Designate	Commercial Systems plus RPG II	SW London
6024	BURROUGHS	Programmer	1 yr. COBOL (any machine)	City
6080	NCR	Senior Analyst/Prog.	2-3 yrs. Systems + RPG II/COBOL	SW London

FOR INFORMATION ON ANY OF THE ABOVE VACANCIES:

Telephone: 01-828 8717 (4 lines)

ADVANCED TECHNICAL SERVICES

10 TACHBROOK STREET
VICTORIA SW1V 1FN

MYRIAD

ANALYSTS AND PROGRAMMERS DEVELOPMENT PROJECTS NEW 2970 INSTALLATION

CENTRAL LONDON

Our client has recently installed a dual ICL 2970 configuration to replace their 1900 series hardware and are now ready to embark on an impressive schedule of major new projects. They can therefore offer Analysts and Programmers the opportunity to develop systems that are stimulating, by virtue of their unusual nature, and rewarding in that they will extend skills and broaden experience by using some of the most advanced computing techniques available.

The company are able to offer very competitive salaries backed by a range of benefits including formal training, a pension scheme, season ticket loan, staff restaurant and sports and social facilities.

The computer department is housed in the London head office and comprises a complete suite of purpose designed accommodation. It is particularly convenient for Southern Region main line travel centres and easily commutable for most other areas.

SYSTEMS ANALYSTS £6000-£6750 PROGRAMMERS £5250-£6250

We are seeking people with around three years' experience in the industry who have gained some analytical involvement and now wish to extend their skills working as a member of a highly qualified team in a development environment.

Applications are invited from Programmers with around two years' COBOL on any machine. They will join teams where they will gain total project involvement and will have the opportunity to use some of the most advanced hardware and software available.

Ref. SE1/0802

MYRIAD APPOINTMENTS LIMITED

30 Fleet Street London EC4Y 1AA

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LEBUS UPHOLSTERY

requires an ambitious

Analyst/Programmer

at the Reading headquarters of Britain's largest single Upholstery unit.

This is a challenging position in a small management services department using an ICL 2903 with EDS-30s on order for on-line developments.

The successful applicant will need a minimum of two years' RPGII commercial programming experience and will have the early potential ability to take personal responsibility for user orientated projects from systems investigations, analysis and design to programming, testing and implementation.

Salary c. £5,000 per annum.

Applicants (male/female) are invited to apply giving brief details to:

A. M. HOWARTH, Company Secretary
Lebus Upholstery Limited, P.O. Box 7
Woodley, Reading, Berkshire

2950 VME/K

The professional team making our new 2950 talk need more Analyst/Programmers and Programmers

ANALYST/PROGRAMMERS

will join Systems teams working on a Systems/Programming m/s. Experienced, computer-aware Programmers will find this a splendid introduction to full-time Systems work. Initial salary up to £5,250 depending on experience. Terry Russell is the Systems Manager to contact.

PROGRAMMERS

will join a compact Development, Maintenance and Operating Systems team (George 2 now VME/K to come).

COBOL knowledge would be useful, but not essential; we'll train you. Salary up to £4,800.

Barry Walker, Technical Manager, is the man to contact.

In both cases, planned projects cover all aspects of a vibrant multiple retailing organisation. Career prospects in the company, and throughout the British Group, are excellent.

Telephone or write to:
Tony or Barry at
Halfords Ltd., Island Street Drive, Washford
West, Redditch, Worcs. Tel. Redditch 27601.

HALFORDS

A BURWELL GROUP COMPANY

ANALYST/PROGRAMMER

Move forward with us and you'll never look back

In 10 years, we have become one of the most respected and successful companies in our field. For most of our career, we have been clients in computer, industry, government and science, working on a variety of projects.

You should have a thorough understanding of at least one of the major ranges of computer hardware and the ability to apply your experience to new ranges.

You'll find the opportunity to work on a variety of systems in a wide range of projects, development and testing, implementation, and liaison with programmers and users.

As one of our hard-ten staff you will thoroughly professionalise your work, work without supervision and improve clients with your technical knowledge, experience and efficiency.

Working in a challenging environment, you'll enjoy a salary of c. £7,000 plus company benefits and excellent promotional opportunities.

We are a place with total career development and a long-term commitment to you.

Fraser William Computer Consultants

LONDON - LIVERPOOL - MANCHESTER - BIRMINGHAM - SHEFFIELD - GLASGOW - TORQUAY

LIVERPOOL POLYTECHNIC

DEPARTMENT OF MATHEMATICS

RESEARCH ASSISTANT

Applications are invited from suitably qualified graduates to undertake research in the field of mathematical statistics. The successful candidate will be responsible for the statistical analysis of large amounts of data and will be expected to produce a thesis for submission to the University. Salary: £2,100 to £2,400 p.a. depending on qualifications and experience.

Pre-employment tests will be held on 15th March. The job being advertised is for a student, academic staff, College administration and external users.

Salary: £21,180 to £24,687 per annum depending upon qualifications and experience.

Pre-employment tests will be held on 15th March. The job being advertised is for a student, academic staff, College administration and external users.

SOUTH WEST UNIVERSITY

REGIONAL COMPUTER CENTRE
University of Bath

ICL 2980 SYSTEMS PROGRAMMER

The Regional Centre (BATHURD) runs a large ICL 2980 system. A vacancy exists in the Systems Development Group, which is responsible for the development and testing of new systems. The successful candidate will be responsible for the development and testing of new systems. Salary: £3,850 to £5,555 (under review).

Applications should be sent to the Personnel Officer, University of Bath, Claverton Down, Bath, BA2 7AY.

Closing date for applications is 15th February.

GMC

Greater Manchester Council

COUNTY ENGINEER'S DEPARTMENT

TRANSPORTATION PLANNING GROUP

SYSTEMS ANALYST/PROGRAMMER

£4245/£8080 p.a. including supplement.

This is one of four similar posts within the town's transport planning section which provides a service for the Department. Applications are supported in the areas of Transportation Planning, Highways/Bridge Design, Highway Maintenance, Accident Investigation and Rescue Dispatch.

The Department has its own PRIME 400 installation which is linked to a graphics unit, thus providing an opportunity to gain experience of working with the latest techniques in computer technology.

Applicants should have a degree in a numerical subject and at least three years' FORTRAN experience.

Conditions of service include removal, legal, etc. expenses up to £750; lodging allowance; flexible working hours.



BENDIGO COLLEGE OF ADVANCED EDUCATION

COMPUTER MANAGER

(no advertised)

Applications are invited from suitably qualified persons for the position of Computer Manager. The appointee will be responsible for the quality and effectiveness of computer services within the College. Applicants should have a broad knowledge of computing, covering hardware, software and applications with special expertise in at least one of these areas, and considerable professional experience involving leadership and staff management.

The College computing facilities include ICL and PDP equipment with an RJE facility to the CYBER 22 at R.M.I.T. The job being advertised is for a student, academic staff, College administration and external users.

Salary: \$21,180 to \$24,687 per annum depending upon qualifications and experience.

Pre-employment tests will be held on 15th March. The job being advertised is for a student, academic staff, College administration and external users.

Applications should be sent to the Personnel Officer, University of Bath, Claverton Down, Bath, BA2 7AY.

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KUWAIT is the second largest exporter of oil in the world and has a very healthy economy, many thousands of expatriate workers being employed there. Social facilities include several cinemas (which show English-speaking films), restaurants and sports clubs, where tennis, squash and swimming are available.

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REQUIRED PROFILE:

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Computer Resources Recruitment, Thorndike House, 70-76 Bell Street, London NW1.



Computer
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6018	IBM	OS/VS1	Operator	2 Years	Middx.	£4,800
6034	IBM	OS/VS1	Chief Operator	3 Years	W. London	£6,200
6036	IBM	OS/VS1	Senior Operator	5 Years	W. London	£5,500+
6062	IBM	OS/VS1	Operator	12 Months	Middx.	£4,850
6102	IBM	OS/VS1	Operator	18 Months	Surrey	£4,250
6040	ICL	SI	Operator	12 Months	W. London	£4,300
6055	ICL	MANUAL	Operator	12 Months	C. London	£4,500
6095	ICL	DIH	Senior Operator	2 Years	S.W. London	£4,500
6049	NCR	Any	Operator	12 Months	S.W. London	£4,000
6084	UNIVAC	Exec 8	Operator	2 Years	S.W. London	£4,000
6100	UNIVAC	Exec 8	Operator	2 Years	N.W. London	£4,800+

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opportunities to gain valuable training and practical experience of micro work using Intel 8085 and RCA Cosmac 1802. Salaries up to £7000 per annum depending on experience. Ring Walter Wilcox for an informal chat about the possibilities at Wokingham (0734) 790897 or (0493) 87082 after normal hours or Saturday.

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FIELD SALES: The ideal candidate will have previous experience of selling data communications kit. However, a successful track record in any computer or electronics related field will also be relevant. A substantial basic salary is offered plus a bonus, generous commission scheme and company car. Commission will be guaranteed initially and the first year quota earnings are circa £8000 which one may confidently expect to exceed.

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THE SALES AND MARKETING BIT

FORECASTING—II

A prediction, not a prophecy

FORECASTING is a prediction, not a prophecy, yet it cannot be truly regarded as an exact science. It is at best a conscientious, even heroic attempt to bring about an informed anticipation of future events, most of which are uncontrollable.

The creation of a meaningful sales forecast is not an overnight job. The sources of input are so many and so diverse that the physical effort involved demands an elapsed-time measured in weeks, even months.

There are many factors the sales forecast must take into account and these broadly fall into two categories — internal and external forces.

Let us consider some of these factors. **INTERNAL FACTORS** Direct Revenue Existing and Known Potential Clients

By and large, this should be the most reliable element of the sales forecast, the prediction of a known usage pattern. However, this is apparently a predictable that there is a great danger of assuming too much. There is only one

way of predicting the likely pattern of future business from an existing user base — go and ask them, everyone, individually! That's a job for the salesman.

"My company has asked me to make a forecast of probable business next year, Mr Customer, and I wonder if you could tell me if your present expenditure will continue and if you anticipate requirement for further systems/equipment during that period?"

Similarly with prospective clients, in order to establish a likely start date, the level of expenditure and the percentage chance of getting the business, it is usually best to exclude any such possibility which might be rated as less than optimistic. Depending on the duration of the typical selling-cycle the salesman might also attempt to make some reasonable estimation of that business, which could be generated and billed within the forecast period from sources unknown at the time of forecasting. In my experience such business always occurs, but is impossible to anticipate.

with any accuracy. It is therefore perhaps best to treat it as "gravy" and external to the forecast.

Anticipated Losses

Maybe the company is about to lose some business in the coming year — a contract which has yet to come into effect has been signed with the competition, a service or product is to be discontinued, and so on. It is essential that the negatives be included in the forecast as well as the positives.

Innovations and Special Promotions

Maybe the company is planning to launch a new product or products within the period of the sales forecast. What effect on revenue is anticipated? When will it occur?

Additional revenue from new product releases could be contained in a completely separate budget if the product concerned is significant enough, but that is seldom the case and never applies to special promotions.

INTERNAL FACTORS Company Constraints Financial Implications

Company investment in the provision of resources is a key factor in revenue growth. Is the revenue projection for next year and potential business beyond the scope of present resources in the context of equipment, accommodation, etc? Does the company intend to modify the existing level of investment? Could the company's cash flow tolerate the future of the predicted revenue, particularly for new ventures? Such factors must be considered very closely indeed.

Production Capacity

"Maybe you could sell it, but could you supply it?" There is no point in allowing arrogance to overcome commonsense. If the company has a known finite production capacity including overtime, and does not intend either to subcontract or expand its facilities, then the sales forecast, by making allowances for the reality of lost or unavailable production, can never even be as high as 100 per cent of capacity.

Personnel Resources

Hobby-horsing that one of the tragedies of the computer industry is that as probably the fastest growing and successful industry of all and regularly achieving very significant profits (particularly for overseas investors) it should fall so abysmally to grow the people that are necessary to sustain the industry's own existence. This is particularly poignant at a time of high unemployment.

Individual and Departmental Attitudes

There is one amorphous yet significant force which can affect the sales forecast and that is the attitude of all those people who are involved directly and indirectly with providing the service or product concerned. If they are opposed to a particular product, client, salesman, policy, strategy, promotion, etc then the effect on the resultant revenue can be enormous.

The best way of alienating such people, and thus promoting their disinterest or even opposition, is to disregard their knowledge and experience in the context of predicting what is likely to occur in the year ahead — (or whatever period).

So sales and marketing people all — do involve every person and department who can influence the company's performance in the year ahead when producing a sales forecast. The best way to get people on your side is to get them involved and keep them informed.

ment. The order of the day for many companies is "We don't have the time to train people" this year, so let us steal someone else's employees until we get around to it!"

The effect of this situation can be quite profound on the sales forecast, particularly when it comes to the recruitment of salesmen. How does one get the business without the salesmen to sell it?

It is not unusual for computer companies to approach us in the summer to help them find the salesmen who should have been on hand from January 1.

Pre- and post-sales analysis, applications programmers, operators, engineers and systems programmers equally have a profound effect on the ability to supply the goods and therefore make the revenue.

No sales forecast in these days of short-sightedness towards personnel development can disregard the availability of people.

Trends within the Existing Revenue Base

History is often a fine point for the future. There is therefore much to be gained from projecting those trends (say, the last 24 months) against the completed forecast and noting the differences. At these are all serious incompatibilities, having removed any exceptions, then you may have got it wrong. Either way it is certainly a good discipline.

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So sales and marketing people all — do involve every person and department who can influence the company's performance in the year ahead when producing a sales forecast. The best way to get people on your side is to get them involved and keep them informed.

More next week!

TRADER

Puzzle Answer



Data Processing Co-ordinator

Snamprogetti, a major international contractor, one of the ENI Group of Companies, is restructuring its data processing facilities at its Basingstoke office, following a continued period of growth and expansion, and a Data Processing Co-ordinator is to be appointed to supervise this specialist function.

Applicants should have wide and comprehensive knowledge of data processing facilities, utilising IBM 370/158 and be capable of assisting management in initiating, extending and implementing commercial systems and applications.

The experience required should cover a minimum of two years in operation analysis, together with a good knowledge of PL/I language and job control language in OS system. A knowledge of ASSEMBLY in OS/VS1 or OS/MVS system architecture plus a knowledge of ASSEMBLY and FORTRAN language and remote job entry characteristics. Experience with an international contractor working for a U.K. subsidiary of an overseas company would be a distinct asset.

Very attractive conditions of employment include attractive negotiable salary, pension plan, full life and permanent health security cover, membership of BUPA and other advantages.

Applications, giving full career details including current salary should be addressed to: Personnel Manager, Snamprogetti Limited, Snamprogetti House, Basing View, Basingstoke, Hampshire RG21 2YV.

HERTFORDSHIRE COUNTY COUNCIL
HIGHWAYS DEPARTMENT



PROGRAMMER / ANALYST

SALARY £3852 TO £8180
GRADE AP3/SO2
POST No. EA64

THE JOB
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Applications which the department is presently engaged upon are: Traffic Accident Analysis, Traffic Counter Analysis, Structural Assessment, Road Inventory, Road Treatment Records, Street Lighting Inventory, PERT, Highway Design and Transportation Modelling.

The present County Council computer is the latest NCR Criterion Mainframe, a 1M byte 8580 with large discs, last tapes and terminals. The computer offers virtual storage and interactive programming facilities. The department also uses a number of packages accessed via terminals at computer bureaux.

THE PERSON
You should have a good honours degree in either Computer Science or Civil Engineering with a computer background. Starting salary will be within the range £3852 to £8180 depending on post qualification experience.

For further information and application forms please phone Hattfield 54242 extension 8023, or write to Alison Taylor, Goldings, North Road, Hattfield, Closing date: 23 February, 1979.

THE GENERAL NURSING COUNCIL
FOR ENGLAND AND WALES

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A programmer of some 2 1/4 years' experience is required. Must be capable of leading a small team of programmers in the maintenance of an existing batch record system but also with the skill to bring to fruition present system development leading to a major on-line record keeping system.

The main programming language presently used is COBOL with some PL/I and ASSEMBLER. Knowledge of IBM Job Control Language is essential.

The salary scale for this post is from £4,775 per annum, rising to £5,680 per annum inclusive of London Weighting. Luncheon vouchers of 25p per day are issued, and there is a good pension scheme in operation. The annual leave entitlement is 23 days plus 11 days for statutory holidays. The Council operates a flexi-time system on a 36-hour week.

Mr. Jelley, Computer and Records Officer, Extension 32, will be pleased to discuss this post with a suitable applicant prior to an interview being arranged.

Application forms are available from and interview arrangements can be made by contacting Miss R. J. Huttenner, Personnel Officer, The General Nursing Council for England and Wales, 23 Portland Place, London W1A 1SA. Telephone: 01-580 8334, Extension 43.

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Ring 01-205 7041 for a more detailed job description (Dr. L. R. Hill, on Ext. 47) and for an application form (Personnel Officer, on Ext. 12) - Central Public Health Laboratory, Colindale Avenue, Colindale, London, N.W.9. Closing date: 15th February, 1979.

THE LONDON HOSPITAL MEDICAL COLLEGE
(University of London)

COMPUTER PROGRAMMER

Applications are invited for the post of Programmer in the Computer Section from Programmers with at least one year's experience.

The Computer Section provides an advisory and programming service to the staff and students of the Medical College.

A PDP 11/10 is used both as a local computer and as a terminal to the University Computer. Experience of using FORTRAN is essential. Knowledge of SPSS, BMD and PDP-11 assembler would be an advantage.

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Enquiries to Mr S. Evans, Tel. 01-377 2685.

Application to The Secretary, The London Hospital Medical College, Turner Street, London E1 2AD, giving the names of two referees.

THE CITY UNIVERSITY
Department of Systems Science

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3 PROGRAMMERS

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